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SERIES OF 1894. BULLETIN NO. 1.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF MAY, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

BOSTON:

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1894.

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Crop Report for the Month of May, 1894.

Office State Board of Agriculture,
Boston, Mass., June 1, 1894.

The issuing of monthly crop reports during the growing season having proven so acceptable in past years it has been decided to issue them this season. The table and synopsis of Massachusetts weather will be furnished monthly by the New England Weather Service as heretofore. Also arrangements have again been made for the issuing of weekly crop-bulletins in co-operation with the Service. Attention is called to an article at the end of this bulletin, by the Pomologist of this Board. It is addressed to fruit growers, dealers and consumers and is timely and to the point.

Report on Farm Animals.

Report No. 112, United States Department of Agriculture, Division of Statistics.

Horses.

The returns of the number of horses show an increase of the same in 30 out of the 47 States and territories, not including Oklahoma and the Indian reservations; a decrease in 17 States and territories, and a general decrease as compared with returns of January, 1893, of 125,663, the total number of horses in January last year being 16,206,802, against 16,081,139 at the same date in 1894, which were valued at $769,224,799. An increase is shown in all the New England and Middle States, with the exception of New Jersey. Prices have declined in all the States and territories, excepting Rhode Island and Idaho. The average range is from $15.80 in New Mexico to $95.43 in Rhode Island, the average value being $47.83. In addition to the general depression, the cause of the low prices of horses is attributed to the rapid substitution of electrical and other motors in the street car service of towns and cities. There has been a slight increase in the number of mules, the aggregate in

January, 1894, being 2,352,231. The average value of this animal has declined from $70.68 in January, 1893, to $62.17 at the same date the present year.

Milch Cows.

There is a tendency to an increase in the number and value of milch cows, though as yet slight, so far as indicated by the figures, in spite of the financial depression, owing, doubtless, to the firmness in price which dairy products have maintained in the market. The estimated present numbers are 16,487,400 against 16,424,087 in January, 1893; average price, $21.77, against $21.75, and aggregate average value, $358,998,661, against $357,299,785 in January, 1893.

Oxen and Other Cattle.

In the case of oxen and other cattle there is presented an increase in numbers over last year, but a slight decline in price and aggregate value. Total number, 36,608,168; average price, $14.66; total value, $536,789,747.

Sheep.

Sheep have suffered a rather abrupt decline in numbers, price and, of course, aggregate value since January, 1893.

Swine.

Although swine have, like sheep, fallen off in numbers to a considerable extent, the decline in price is not so marked, and a reaction toward higher prices is everywhere discernible. Returns in April, 1893, showed a scarcity of brood sows then on hand, but returns this spring indicate a normal proportion of breeders.

Summary.

Horses in the United States Jan. 1, 1894, 16,081,139, valued at $769,224,799; mules, 2,352,231, valued at $146,232,811; milch cows, 16,487,400, valued at $358,998,661; oxen and other cattle, 36,608,168, valued at $536,789,747; sheep, 45,048,017, valued at $89,186,110; swine, 45,206,498, valued at $270,384,626; total value of farm animals, $2,170,-

816,754. In number of horses Iowa leads with 1,367,329 and in average price Rhode Island leads with $95.43. The smallest number, 10,443, is credited to Rhode Island and smallest average price, $15.80, to New Mexico. In number of milch cows New York leads with 1,572,443 and in average price New Jersey leads with $35.20. The smallest number, 14,878, is credited to Arizona and smallest average price, $10.76, to Arkansas. In number of oxen and other cattle Texas leads with 6,591,787 and in average price New Jersey leads with $29.11. The smallest number, 11,713, is credited to Rhode Island, and the smallest average price, $7.02, to Arkansas. Reports from all sections of the country (April, 1894) indicate a generally high condition of all farm animals.

Crops of 1893, Report No 113, March, 1894.

Corn.

This report states that the tendency to an enlargement of the area devoted to corn, as noted in a former report, does not seem to be sustained by the experience of the past two years. The crop of 1893 amounted to 1,619,494,000 bushels, of which 585,816,350 bushels or 36.2 per cent was on hand March 1, 1894; 1,369,159,980 bushels or 84.5 per cent was consumed in the county where grown and 250,334,020 or 15.5 per cent was shipped out of the county where grown. Ordinarily only the seven Western States of Ohio, Indiana, Illinois, Iowa, Missouri, Kansas and Nebraska have any material excess over what is required for home consumption. Eighty-five and six-tenths per cent of the crop of 1893 was merchantable. The massed value of the corn crop of 1893, as estimated in the December report, was $591,625,627, or an average value of 36.5 cents per bushel. The crop for Massachusetts is given as 1,355,000 bushels, of which 1,260,150 or 93 per cent was merchantable. The average value of the merchantable was $0.55 per bushel, of the unmerchantable $0.33 per bushel; total value, $724,384.

Wheat.

The crop of 1893 amounted to 396,132,000 bushels, of which 114,059,560 or 28 8 per cent remained on hand March 1, 1894; 154,018,770 or 38.9 per cent was con-

sumed in the county where grown and 242,113,230 or 61.1 per cent was shipped out of the county where grown. The average farm price of wheat for 1893 was $0.538 per bushel and the average weight per bushel was 57.6 pounds. The condition of winter wheat on the first day of April, 1894, as reported by the Statistician of the Department of Agriculture, averaged 86.7 per cent for the entire country, against 77.4 in 1893 and 81.2 in 1892. The corresponding average for rye was 94.4 per cent.

Meteorological Summary.

Furnished by the New England Weather Service.

January, 1894.

The weather for the month of January in Massachusetts was warm and dry. At Somerset the mean temperature was 4.3° per day higher than the normal; at Springfield it was 3.9°; at Fitchburg, 3.5°; at Boston, 3.4°; and at New Bedford and Woods Holl, 1.8°. The highest temperature was on the 24th and 25th, and varied from 47° to 57°. The lowest was on the 13th and 29th, and was from 8° above zero on the coast to 9° below zero in the interior counties.

The precipitation was slightly more than the usual amount at Lake Cochituate and Woods Holl, but was deficient in all other districts. Most of the snow fell on the 27th and 30th, so at the end of the month there was a good covering on the ground, but during the greater part of the month it was mostly bare. As there were no extreme or severe ranges of temperature during the time there was little damage to fruit or grass and grain roots.

February, 1894.

February was very cold, and decidedly the "winter" month of the year. The precipitation was more than usual along the coast and deficient in the interior, and was mostly in the form of snow. The highest temperature occurred in most places on the 18th, and was from 42° to 54°. It was low on the 6th and 25th, while the 24th was the coldest day of the month, and at many places the coldest for years. Along the eastern coast the highest temperature for the day on the 24th was only from 5° to 12° above zero, while in the

western part of the State it did not rise above 4° to 11° below zero. At Provincetown the temperature fell to 1° below zero, the lowest ever recorded there by the present observer. The monthly and daily ranges of temperature were very great, and the inversions of temperature — warmer on the hills than in the valleys — were noted on numerous occasions. A marked example of the influence of the wind on the temperature was given on the 17th and 18th at Concord. The wind had been westerly, and on the morning of the 17th the temperature was 20° below zero. Under the influence of an advancing cyclone over the lakes the wind changed to southerly, and as the storm passed to the north of New England the temperature rose without a fall through the day and night of the 17th to 51° above zero at about two P.M. on the 18th, — a rise of 71° within thirty-six hours.

Fortunately the ground was generally well covered with snow during the extreme cold weather so nothing in the ground suffered. Peaches, however, standing above the snow could not be protected, and from sixty per cent to seventy-five per cent of the buds were killed. Other fruit was not injured.

March, 1894.

March was very warm and very dry. The excess in temperature averaged over 8° a day at Boston, Cambridge, Somerset, Fitchburg and Springfield. At Boston the mean temperature for the month, the mean of the three consecutive warmest days and the mean for the warmest day was higher than ever before recorded for March in the history of the Weather Bureau; higher *maximum* temperatures occurred on March 10, 1878, and on March 5, 1880. At New Bedford, which has a complete record since 1813, the mean for the month was higher on the following years only: 1825, 1831, 1842, 1859, 1865, 1871 and 1878. At a few stations along the coast the highest temperature was on the 6th, but generally it was on the 19th, and varied from 60° to 74°. The coldest spell was on the 27th and 28th, when the temperature fell from 8° to 20° below freezing. This cold wave did great damage to crops and fruit in the Central and Southern States, but New England escaped with no serious injury. Reports from well known and reliable fruit growers showed

that nothing was damaged except peaches, and those but slightly.

It was the dryest March on record in the history of the Weather Bureau at Boston. At Fall River, Monroe and Vineyard Haven the amount of precipitation was over two inches, but elsewhere it was from three-fourths to one and three-fourths inches, and was from two to three and one-half inches below the usual amount for the month. The snowfall was small and the ground was bare the most of the month. The Connecticut River opened before the 15th, and many wild birds made their appearance. At the end of the month the season was about two weeks ahead of the average.

April, 1894.

April was warm and dry in all interior districts, and cool and wet along the south-eastern coast. The warmest day was generally on the 27th, the temperature rising to 72° to 82°. The lowest was everywhere on the 3d, when it fell to from 5° to 20° below freezing. The mornings of the 25th and 30th were quite cold, but little damage to crops was reported.

The deficiency in rainfall for the month was 1.51 inches at Amherst, but along the coast it was slightly in excess, the greater part coming with the snow-storms of the 9th, 11th and 12th. The latter storm was very severe along the coast. High gales prevailed, and with the damp heavy snow did great damage to telegraph and telephone service, the poles on some lines being laid flat for miles. Train service was delayed on that account. It was very dry at the end of the month, but all farm work and growth of vegetation was about two weeks ahead of the average.

TEMPERATURE AND RAINFALL FOR THE WHOLE COUNTRY.

FROM UNITED STATES WEATHER-CROP BULLETINS.

Week ending May 7. — Week warm and weather conditions favorable for growing crops in all sections east of Rocky Mountains. Week cool on Pacific coast, except over interior valleys of California, where hot, dry weather prevailed. Very little rain fell except in upper Lake region,

central Mississippi and lower Ohio valleys. Rainfall for season much less than usual over greater portion of country east of the Mississippi, the season having been unusually dry in Atlantic coast States and in California. Thermal conditions from March 1 to May 1 in advance of average season over regions east of Rocky Mountains, while west the deficiency in seasonal temperature amounted to about 2 degrees per day.

Week ending May 14. — Week warmer than usual in all districts east of Rocky Mountains, except in northern Texas and Indian Territory, where the temperature was about normal. Also warmer than usual over Rocky Mountains and plateau regions, but week cool on Pacific coast. Very little rain fell in Middle Atlantic and New England States during the week. The southern portions of cotton region were favored with more than usual amount of rain. Heavy rains in Texas. Drought conditions in Florida and North Carolina.

Week ending May 21. — Week one of unusual temperature extremes. Ice formed in Wisconsin, and snow fell in Michigan, Indiana and Kentucky. Frosts, more or less damaging, occurred in New England, the Lake region, generally throughout States of upper Mississippi, Missouri and Ohio valleys, and as far south as northern Mississippi. Rainfall very heavy in Lake region, Ohio valley and Middle Atlantic States. Destructive freshets in portions of Pennsylvania, western New York, Michigan and Wisconsin. Drought prevails in eastern South Dakota, Nebraska, Arkansas, southwest Texas and New Mexico.

Week ending May 28. — Cooler than usual in all districts, with the exception of the central plateau region and from the upper Missouri valley westward to Oregon and Washington, where it was warmer than usual. Over the greater portion of the country east of the Rocky mountains the night temperatures were unusually low. Over the greater part of New England and the Middle Atlantic States the rainfall was unusually heavy. Throughout the central valleys and on the south Atlantic coast there has been but little rain. Drought conditions reported from Iowa, Nebraska and Wyoming. The week the most favorable of the season on the north Pacific coast.

New England Weather and Crops.

From United States Weather-Crop Bulletins.

Week ending May 7. — Warm and dry; splendid weather for farm work and growth of vegetation; season nearly two weeks ahead; grain, garden crops and early potatoes coming up in southern portions; all fruit, except peaches, showing heavy bloom.

Week ending May 14. — Warm, sunshiny days, cold nights, with light frost; no serious damage; very dry, grass and crops are being injured in southern portion; grain has a good stand; most of the potatoes and some corn planted.

Week ending May 21. — Cool and windy; very dry first of week, and grass on old dry fields injured very much; late rains, heavy in central district, were of great benefit; considerable damage by frost to early vegetables; fruit suffered very little.

Week ending May 28. — Cool, cloudy, and wet; rain heaviest in central and southern portions, where farm work is delayed and some newly planted seeds are rotting; drought thoroughly broken; grass greatly improved; considerable damage by frosts in central districts.

Massachusetts Weather.

Meteorological Data for May, 1894.

[Furnished by the New England Weather Service.]

Station.	Temperature. Deg. F.					Precipitation.		Prevailing Wind.	Cloudiness. No. of Days.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Cloudless.
Pittsfield,	55.8	77	2, 3	33	15	3.82	13	–	–	–	–
Springfield,	60.0	88	2	38	15, 22	3.59	11	S.	–	–	–
Amherst,	56.4	84	1, 2	28	15	3.80	14	S.W.	8	11	12
Fitchburg,	56.5	84	1, 2	32	22	3.56	11	N.W.	14	8	11
Worcester,	57.4	84	2	38	22	4.63	11	N.W.	11	10	10
Dudley,	57.6	86	2	36	22	3.52	10	W.	12	6	13
Wellesley,	59.4	87	2	35	15	4.06	11	–	–	–	–
Lowell,	57.4	84	2	33	22	4.36	13	–	–	–	–
Boston,	57.6	88	2	39	22	4.12	12	E.	10	10	11
Taunton,	59.7	90	2	31	11	3.76	13	S W.	10	13	8
New Bedf'd,	55 8	87	2	35	11	4.60	11	S.W.	7	12	12
Hyannis,	58.5	86	2	40	15	3.74	8	S W.	9	11	11
Provincet'n,	55.6	86	2	39	22	3.51	7	S.E.	9	11	11

Summary.

Temperature (F.).—Monthly mean, 57.5°; highest monthly mean, 60° at Springfield; lowest monthly mean, 55.6° at Provincetown; maximum, 90° at Taunton on the 2d; minimum, 28° at Amherst on the 15th; range, 62°; greatest local monthly range, 59° at Taunton; least local monthly range, 44° at Pittsfield; greatest daily range, 44° at Taunton on the 15th and 16th; least daily range, 2° at Hyannis on the 24th. At Springfield the mean temperature averaged 1° per day above the normal; at Fitchburg it was 1.2° above, and at Boston 1.4° above.

Precipitation. — Average, 3.93 inches; greatest amount, 4.63 at Worcester; least amount, 3.51 at Provincetown. At Springfield the total precipitation was 0.57 inches below the usual amount, and at Fitchburg it was 0.51 below, while at Lowell it was 0.61 inches and at Boston 0.55 inches more than the normal amount for this month.

Prevailing Wind. — South-west.

Thunder-storms. — 2d, 4th, 7th, 18th, 19th, 28th.

Hail. — 4th at Dudley.

Frost. — 11th, 12th, 15th, 16th, 17th, 22d.

Remarks.

The month as a whole has been favorable for cultivation and growth of crops. The season was early at the start and the generally dry, pleasant weather enabled rapid work to be done on the land and all vegetation to push along quickly. But by the second week some fields were too dry to put in seed and those already planted were coming slowly. Beginning with the 18th the drought was effectually broken by rain and for the rest of the month mostly cloudy, cool weather prevailed with frequent rains. Some seeds on low lands have been injured by the rains and while the weather has been very favorable for grass it has not been warm and sunshiny enough for corn and like crops. Quite a good deal of damage has been done in eastern sections by high winds, and in all sections by frosts. The highland district in southern Worcester county seems to have escaped the frost more than any other in the State.

In the circular to correspondents returnable May 31 the following questions were asked: —

1. How does the present season compare, agriculturally speaking, with last season?

2. What is the condition of live stock in your vicinity?

3. What is the promise for pastures and mowings, and did fall seeding winter well in your vicinity?

4. How did the fruit bloom compare with former years?

5. What insects appear to be doing the most damage in your neighborhood, and what measures are being taken to prevent their ravages?

6. Is farm help scarce or plenty; and what proportion would you call good help?

7. What wages, with board and without board, are paid farm help in your vicinity?

8. Do you think the present industrial depression has increased or decreased the acreage of crops in your vicinity?

Returns have been received from 127 correspondents, and from them the following summary has been made: —

The Season.

Correspondents differ materially in their answers under this head. The replies range from "later" and "unfavorably" to "two weeks earlier than last year" and "very favorable." The season opened from ten days to two weeks earlier than usual, but the dry weather of April and the first part of May and the cold storms since, and frosts, have left it, the first of June, very nearly an average though somewhat in advance of the same date last year. The following extracts will illustrate: Falmouth, Barnstable County. "As to the season, some things are away ahead while others are not. Vegetation started early but we have had it so dry, with very little rain in March, April or May until last week, and very cool nights with frost." Templeton, Worcester County. "The early opening of the season induced farmers to push their crops into the ground, but later cold weather and drought retarded their growth so that now they are but little over the average of former years. The first half of May was unusually dry. The last half has been cold with an excess of cloudy, wet weather. The storms are followed

by north winds and frosts." Blandford, Hampden County. "The season is one that in all respects will be considered as peculiar. Opened early, in fact on our hills as early as in the Connecticut Valley. Stock could go to pasture about May 1 and do well. All land in extra shape until middle of May."

Live Stock.

Most of the correspondents speak of live stock as having wintered well and being in good condition. Several speak of animals having been killed because affected with tuberculosis. The replies received indicate that our stock is generally in a healthy and thrifty condition.

Mowings and Pastures.

Correspondents generally speak of great improvement in the condition of pastures and mowings as a result of the recent rains and cool weather. The outlook now is for a good crop of hay on newly seeded and moist lands, and for a light to fair crop on old and dry fields. Correspondents are practically unanimous in stating that fall seeding wintered well.

Fruit Bloom.

The apple bloom was unusually heavy, the peach bloom light and the bloom of other fruit trees and small fruits a good average. It is thought that the frosts and cool, wet weather have materially injured the fruit crop.

Insects.

Very few correspondents report the presence of the tent caterpillar this season. A large proportion, however, speak of unusual numbers of canker worms and cut worms, which have proved very destructive. It is thought that the ravages of the canker worm are, to a large extent, the result of an unexpected appearance of the pest, most people not expecting it and therefore not being prepared. Some have sprayed their trees, but most people have let them alone. Other insects mentioned are the potato beetle, currant worm, gypsy moth and army worm.

Farm Help and Wages.

Replies to the question of farm help and wages vary, of course, according to localities and character of work expected. Available farm help is more plenty than during the past few years, owing, no doubt, to the large number of mechanics and laborers out of employment on account of the present industrial depression. A number of correspondents state that farm help is plenty and others that it is scarce. Good help is always scarce. Of the 68 replies to the query in regard to the proportion of good help 16 correspondents give the proportion as $\frac{1}{2}$, 12 as $\frac{1}{10}$, 8 as $\frac{1}{4}$, 6 as $\frac{1}{5}$, 5 as $\frac{1}{3}$, 5 as $\frac{1}{4}$, 3 each $\frac{3}{4}$, $\frac{1}{20}$ and $\frac{1}{50}$, 2 each as $\frac{2}{5}$ and $\frac{1}{8}$, 1 as $\frac{7}{8}$ and 2 as only one in one hundred. Wages per month with board range from $8 to $28 per month according to locality and character of help. The average appears to be $18 to $22 per month. Per day the range is from $1 to $2 with $1.50 as the average. From $8 to $12 per month is allowed for board. One correspondent in Franklin County writes: "We are overrun with tramps. Some of them will work a few days and then pass on." Another in Berkshire County writes: "Probably not more than 25 per cent of farm help are first class. It is absolutely true when I say first class help is not to be had as compared with forty years ago." One in Worcester County writes: "It appears from the results of the late stagnation in manufacturing, that the average mill hand, male or female, would rather be helped by the town or go on the tramp, than to leave the village and work on a farm, and that help from such sources must not be looked for." One in Middlesex County writes: "Tramps are unusually numerous; but few seriously ask for work. Our town farm superintendent offers them the alternative of crackers and water, or sawing wood for a good square meal. About 98 per cent take the crackers and water." Another in Middlesex County writes: "There are plenty of men that can pick and shovel and do that kind of work. Men that can drive team, hoe and take good care of cultivated crops have been scarce for years."

Effect of Industrial Depression.

The general opinion of correspondents is that the present industrial depression has had no material influence as yet on the acreage of crops. In the Connecticut Valley the acreage of tobacco has decreased because of uncertainty of tariff legislation and consequent lack of a market, and in place of tobacco there has been an increased acreage of potatoes, onions and corn. Thirty-nine correspondents note an increase in the acreage of crops in their vicinity and six a decrease. Seventy-one note no change in acreage. One correspondent writes that the acreage has increased because so much help is being offered at small wages; another that it has been increased because people from the city have rented land in the country; another that there is a slight tendency to increased area to offset low prices; another that the vegetable gardens in the villages have increased.

NOTES OF CORRESPONDENTS.

(Returned to us May 31.)

BERKSHIRE COUNTY.

Sheffield (Dwight Andrews). — The present season is about as last. Live stock is looking well. Pastures and mowings are in good condition, and fall seeding wintered well. The fruit bloom was a full average. Farm help is scarce, about one-fourth being good help. Wages $18 to $20 per month with board. There is an increase in the acreage of crops.

Stockbridge (F. A. Palmer). — The present season is better than last year, agriculturally speaking. All kinds of stock wintered well. Pastures and old meadows are looking well. Spring seeding was nearly a failure but fall seeding is good. The fruit bloom was heavier than usual. Very few insects have appeared; a little spraying has been done. Help is plenty, one-half being good help. Wages are about $20 per month with board and about $38 without board. The acreage of crops is increased, especially corn.

Cheshire (L. J. Northup). — The season is two weeks earlier than last year. Live stock is looking well. Pastures and mowings are looking well. The fruit bloom was unusually full. Tent caterpillars and potato bugs are quite numerous where they are not looked after. Good farm help is scarce, not more than 25 per cent being first class. Wages range from $15 to $25 per month with board.

Lee (A. Bradley). — The present season is a little in advance of last year. Live stock is in good condition. Pastures and mowings are looking well, and fall seeding wintered fairly well. The fruit bloom is a full average. Farm help is very plenty, one-fourth being good help. Poor help can be had for $10 per month and board for seven months; good help is paid $1.50 per day without board. The industrial depression has had little effect on the acreage of crops.

Becket (Wm. H. Snow). — The season is ten days earlier than last year. Live stock is looking as well as usual. Pastures and mowings are looking well, but fall seeding has suffered from dry weather. Fruit bloom a full average. Farm help is not

plenty and but a small proportion is good. Wages are $20 with board and $30 without. The depression has made no difference with the acreage of crops.

Hancock (C. H. Wells). — The present season is a week earlier than last year. Live stock is in full average condition. Pastures and mowings promise well but fall seeding did not winter well. The fruit bloom was much better than last year. Currant worms are doing the most damage. Farm help is not plenty and not more than 25 per cent is good help. Wages are $15 or $16 per month with board and $20 to $25 without. There is little difference in the acreage of crops.

FRANKLIN COUNTY.

Colrain (A. A. Smith). — The present season compares favorably with last year. Live stock is in excellent condition. Pastures, mowings and fall seeding are all in fine condition. The fruit bloom was fully equal to former years. The tent caterpillar is doing the most damage. Farm help is plenty but poor. Wages are $18 per month with board and $30 without board.

Bernardston (R. H. Cushman). — Season two weeks earlier than last year. Stock is in average condition and much was turned to pasture early for lack of hay. Mowings are thin and there is not much feed in pastures. The fruit bloom was full but much damage was done by frost. Cut worms and tent caterpillars are as plenty as usual. Help is plenty with a small proportion first class. Good help commands from $12 to $20 per month with board. Crops are about an average in acreage, with a slight increase for potatoes.

Conway (J. C. Newhall). — The season is two weeks earlier than last year. Live stock is in average condition. Pastures are in fine condition and the hay crop promises well on rich land. Fall seeding wintered well. The fruit bloom was very large. Cut worms are plenty. Farm help is more plenty than usual. Wages range from $10 to $25 per month with board. There is little difference in the acreage of crops.

Whately (Frank Dickinson). — The season is more favorable than last year. Live stock is above the average in condition. Pastures and mowings have improved since the rain. All new seeding is looking well. Fruit bloom above the average. Cut worms are working to a great extent. Farm help is plenty with not more than one-fifth good help. Wages are from $16 to $18 per month with board and from $1 to $1.25 per day without. The acreage of tobacco is less than usual and that of potatoes and onions greater.

Sunderland (J. M. J. Legate). — The season is two weeks earlier than last year. Live stock is in good condition. The drought has crippled the pastures, and the hay crop will be light. Fall seeding wintered well. The fruit bloom was not average; the frost of the 15th damaged it somewhat. Help is very plenty, all being foreign help and most of it good. Wages are from $10 to $15 per month with board and from $1 to $1.25 per day without. The acreage of all crops, except tobacco, much larger than in former years. The acreage of tobacco has decreased.

Orange (Ansel Harrington). — The season is about as last year. Live stock is in very good condition. Pastures and mowings are not very promising. Fall seeding wintered finely. Fruit trees blossomed very full but were injured by frost on low lands. Potato beetles and cut worms are the only insects. Farm help is rather scarce, but is mostly very good; few foreigners. Wages are $18 to $20 per month with board and $1.50 per day without. Acreage of crops remains as usual.

HAMPSHIRE COUNTY.

Greenwich (Wm. L. Douglas). — The season is much earlier than last year. Live stock is in fairly good condition. Pastures and mowings are improving since the rain. Fall seeding wintered fairly well. The fruit bloom was much larger than last year. Cut worms are doing the most damage. Farm help is not very plenty. There is little difference in the acreage of crops.

Belchertown (H. C. West). — The present season compares favorably with last year. Live stock is in very good condition. Pastures and mowings are not in good condition although recent rains have given them a start. The fruit bloom was a full average. Cut worms are doing the most damage. Farm help is scarce and one in twenty good help. Wages range from $15 to $20 per month with board. Hay will be a light crop and fodder crops must be substituted. Acreage of crops about the same as usual.

Amherst (Wm. P. Brooks). — The season is ten days earlier than last year and everything looks very well. Live stock is in good condition. Pastures have improved since the rain, but old mowings were injured by drought. Fall seeding wintered well. Apples were a very full bloom; pears, cherries and quinces average; peaches very light. Farm help is plenty, but mostly ignorant and inexperienced. Wages are from $12 to $20 per month with board and from $30 to $40 without. The industrial depression has decreased the acreage of tobacco and increased the acreage of other crops.

South Hadley (H. W. Gaylord). — The season has been backward, owing to dry weather. Live stock is in good condition. Fall seeding wintered well and pastures and mowings now promise well. Apples had nearly an average bloom, cherries and pears a three-fourths bloom, and peaches a one-fourth. Cut worms are doing considerable damage. Help is plenty, one-half being good. Wages are $1.50 per day and from $12 to $20 per month; not over ten per cent get $20. The acreage of crops has been increased by the industrial depression because people from the city have rented land in the country.

Northampton (D. A. Horton). — The season is quite as forward as last year. Live stock is in good condition. The grass crop is very forward and new seeding is good. The fruit bloom was unusually full. No insects except a few tent caterpillars. Farm help is plenty, one-fourth being good help. Wages are from $15 to $20 per month with board. The acreage of onions, corn and potatoes has increased and that of tobacco decreased one-fourth.

Southampton (C. B. Lyman). — All crops are earlier than last year and work is more advanced. Live stock has wintered well and is now doing well. Pastures and mowings are doing well since the rains. Fruit bloom very large. Farm help is plenty, perhaps two-thirds being good help. Wages are $18 to $20 per month with board and $1.25 to $1.50 per day without. Fall seeding has done very well. There is not as much tobacco as usual but the acreage of other crops is about the same.

HAMPDEN COUNTY.

Tolland (F. T. Moore). — The season is a little ahead of last year. Live stock is in very fair condition. Pastures are in good condition and the present wet spell may save the mowings. Apples had a very full bloom. There are some potato bugs but the apple trees are free from insects. Farm help is not plenty, one-third good help. Wages are from $12 to $15 per month with board. The average amount of crops will be put in.

West Springfield (J. N. Bagg). — The season compares favorably with last year. Live stock is in good condition. Pastures and mowings promise well. Fall seeding wintered well. The fruit bloom was light, particularly for pears. Cut worms, currant worms and potato beetles are doing the most damage. Farm help is plenty, less than half being good help. With board wages are 75 cents per day and without board $1.25. Planting is about over. The industrial depression has increased the acreage of crops.

Holyoke (J. C. Thorpe). — The season is nearly two weeks earlier than last year. Live stock is in good condition. Dry

weather has injured pastures and mowings. Fall seeding has wintered well. The fruit bloom was heavy, except that of peaches, which was light. Farm help is plenty, about one-half being good. Wages are from $35 to $40 without board and from $18 to $25 with board for good, and $12 to $18 for poor.

Chicopee (R. W. Bemis). — The season is earlier than usual. Live stock is in about average condition. Grass is thinner than usual because of dry weather but has improved since the rains. The early fruit bloom was quite full and the late bloom light. The cut worm is the only insect at present. There are plenty who apply for work but good help is scarce. Wages are from $6 to $12 per week, about $1 less than last year for the same grade of help. There is no change in the acreage of crops except, perhaps, tobacco has decreased.

Wilbraham (F. E. Clark). — The season is two weeks earlier than last year, but in many instances potatoes and corn failed to germinate because of dry weather. Live stock is in fine condition. Old mowings and pastures promise a very light yield. Fall seeding looks finely. The fruit bloom was very full on high land and perhaps a one-third bloom on low land. Help is plenty, not more than one-fourth being good help. Good help commands from $20 to $25 per month with board and from $30 to $35 without. The acreage of crops is increased because help is plenty and wages low.

Brimfield (S. W. Brown). — The season is fully equal to last year. Live stock is in good condition. Pastures and mowings promise well. Fall seeding wintered well. The fruit bloom is twenty-five per cent better than last year. Farm help is scarce and not over twenty per cent is good help. Wages as high as $23 per month and $1.50 per day are paid. No change in the acreage of crops.

WORCESTER COUNTY.

North Brookfield (J. H. Lane). — Live stock is in good condition, much grain being fed. Pastures are bare from the dry weather. The fruit bloom was very full. Very few insects except the potato beetle. Farm help is scarce, not more than one in ten being good help. Wages are from $20 to $30 per month with board. The acreage is increased, and if crops are good the result will be very bad as over-production will reduce prices.

Dana (E. A. Albee). — The season is about ten days earlier than last year. Live stock wintered well and is in good condition. The recent rains improved pastures and mowings. Fall seeding wintered well. The fruit bloom was average but the frosts did great damage. There are only a few tent caterpillars. Farm help is plenty, one-half being good help; with board $20 per month

is paid and without board $1.50 per day. The acreage of farm crops has increased 25 per cent.

Westminster (Joseph Hager). — The season is earlier than last year. There is more complaint of cough among cows than usual. Grass started well and though put back by the dry weather is now doing well. The fruit bloom was unusually large. There are very few insects. Good help is hard to get and receives $20 to $25 per month. There is no perceptible difference in the acreage of farm crops.

Fitchburg (Dr. Jabez Fisher). — The apple bloom was the earliest for 38 years, being 14 days ahead of the average. Live stock is in satisfactory condition. Pastures and mowings suffered from the dry weather but are now doing well. The fruit bloom was very abundant. There are few tent caterpillars but many potato beetles. Help is scarce. Wages are $20 per month with board and $1.50 per day without. There is a slight tendency to increase area of farm crops to offset low prices.

Berlin (P. B. Southwick). — The season is two weeks earlier than last year. Live stock is in fair condition. Pastures and mowings promise well since the rains. Fall seeding wintered well. The fruit bloom never was larger. The cut worm is doing great damage and the canker worm has again appeared. Farm help is not very plenty and much is of poor quality. Wages are $20 per month with board and $1.25 per day without.

Grafton (S. E. Stowe). — The season compares favorably with last year. Live stock is in excellent condition. Pastures and mowings have greatly improved since the rain. Fall seeding wintered well. The bloom of apples and pears was large and that of peaches light. The potato beetle and currant worm are doing the usual amount of damage. Good help is scarce, about one in fifty. Wages range from $18 to $25 per month with board and from $35 to $50 without. The acreage of farm crops is about as usual.

Oxford (D. M. Howe). — The season is about as last year. Live stock is looking well though there are some bad cases of tuberculosis. Dry weather injured grass considerably. The fruit bloom was large, apple particularly. There are fewer insects than for years. Farm help is paid $18 to $22 per month with board and $1.25 to $1.50 per day without. The acreage of farm crops has increased.

Blackstone (L. R. Daniels). — The season has been equal to last year since the rains. Live stock is in good condition. Pastures and mowings suffered from dry weather but are recovering fast. Fall seeding wintered very well. The fruit bloom was

very profuse, but was injured by frost. Cut worms and potato beetles have appeared and the usual measures are being taken to control them. Help is plenty near factory villages but scarce further off, about one-third being good help. Wages are $10 to $15 per month with board and $1.25 per day without board. There is no material difference in the acreage of crops.

MIDDLESEX COUNTY.

Groton (Daniel Needham). — The season is very much earlier than last year and otherwise favorable. Live stock wintered well. If there is an abundance of rain pastures and mowings will do well. Fall seeding wintered well. Fruit bloom general and abundant. Canker worms are doing the most damage and some are spraying. The supply of farm help is about as usual. Wages are $18 per month with board and $36 to $40 without. There is no change in the acreage of crops.

Chelmsford (P. P. Perham). — Most crops promise as well as last year. Live stock is in good condition. Pastures promise well and fall seeding looks finely. Apple bloom far above the average. Canker worms are quite plenty. Farm help is plenty but not one-fifth of it is good help. Good men get $20 per month with board and $28 without. The acreage of farm crops has decreased in this vicinity.

Woburn (W. H. Bartlett). — While some crops are early others are late and the season is about average. Live stock is generally in good condition. Pastures are in good condition and the late rains have helped grass very much. Fruit bloom about two-thirds of an average. Canker worms, tent caterpillars and potato beetles are doing the most damage and spraying is resorted to. Farm help is very scarce. Wages are $1.25 to $1.50 per day without board. About the same amount of land is cultivated as usual.

Arlington (W. W. Rawson). — The present season compares favorably with last year. Pastures and mowings look well. The fruit bloom was very large. No insects have appeared as yet. Farm help is plenty and generally good. Wages are $20 per month with board and $40 without. The acreage of crops has been increased.

Newton (Otis Pettee). — The season is ten days earlier than last year. Live stock is in good condition. Grass is heavily set and there is prospect of a good crop. The fruit bloom was fully average. Canker worms are doing the most damage and there are a few currant worms and tent caterpillars. The efforts of the Newton Horticultural Society to exterminate the tent caterpillar

have been wonderfully successful. The industrial depression has little influence on the acreage of crops.

Sherborn (N. B. Douglas). — The season is more forward than last year. Both cattle and horses are looking uncommonly well. Pastures look well but feed is short. Hay will be light except on newly seeded fields. There was a very full fruit bloom. Canker worms are doing considerable damage and spraying is going on. Farm help is more plenty than usual, three-fourths being good help. Wages are $20 to $22 per month with board and $1.50 per day without. There is no apparent difference in the acreage of crops.

Marlborough (E. D. Howe). — The present season is about as last year. Live stock is in good condition. Pastures and mowings are hardly up to the average. Fall seeding wintered well. The fruit bloom was very full, except for peaches. Canker worms are doing the most damage and about one in three are spraying. Farm help is plenty, 75 per cent being fair to good. Wages are $25 per month with board and $1.75 to $2.00 per day without board. The industrial depression has had no effect on the acreage of farm crops.

ESSEX COUNTY.

Haverhill (Ebenezer Webster). — The present season is not quite as favorable as last. Live stock is in good condition. Pastures and mowings look well except on very dry land. There was a light bloom of pears and a heavy bloom of apples. Insects are not as numerous as usual. Farm help is plenty, about one-eighth being good help. Wages are $20 to $22 per month with board and $1.50 per day without. The acreage of farm crops is not changed.

Groveland (Abel Stickney). — The season is more favorable in many respects than last year. Live stock is in good condition. Fall seeding wintered well. Fruit bloom was uncommonly good with the exception of peaches. Canker worms are doing damage in some portions. The supply of farm help is equal to the demand. Wages are $18 to $25 per month with board and $1.25 to $1.50 per day without. There has not been much change in the acreage of crops.

Topsfield (B. P. Pike). — The present season compares very favorably with last year. Live stock is in full average condition. Pastures are in good condition and mowings look very well. Fall seeding wintered well. Apples had a very full bloom, peaches very light and pears medium. Neither canker worms nor caterpillars are as plenty as last year. Good help is scarce. From $18 to $22 per

month with board is paid. There is not much change in the acreage of crops.

Danvers (C. H. Preston). — The season is well advanced and favorable. Live stock is in good condition. Pastures and mowings are in poor condition but will improve with the rains. There was a large apple bloom; other fruits average. Canker worms are doing the most damage and some are spraying. Farm help is plenty. No change in acreage of crops.

Marblehead (Wm. S. Phillips, Jr.). — The season is about as last year. Live stock is in very good condition. Pastures and mowings are in very good condition. Not much seeding winter killed. The early apple bloom was average, but the late was below. Tent caterpillars are doing the most damage and scarcely any effort is made to destroy them. Help is plenty and perhaps thirty per cent may be called good. Wages are from $16 to $22 per month with board and about $1.50 per day without board. The industrial depression has made no appreciable difference in the acreage of crops.

NORFOLK COUNTY.

Medfield (Geo. R. Chase). — The season is ten days earlier than usual. Live stock is in good order. Pastures and mowings promise fairly now, owing to recent rains. Fall seeding wintered well. The fruit bloom was unprecedentedly large. The canker worm is doing the most damage; a few are spraying. Farm help is scarce, ten per cent being good help. Wages are $20 to $27 per month with board and $1.75 per day without. The acreage of crops remains the same.

Medway (Monroe Morse). — Live stock is about in average condition. The recent cool, wet weather has restored the condition of pastures and mowings to about average. The peach bloom was very light, but other fruits were very full. Canker worms have become quite numerous. Help accustomed to farm work is scarce. A good man is paid $20 per month with board and $1.50 per day without. The industrial depression has made no difference with the acreage of crops.

Franklin (C. M. Allen). — The present season is better than the last. Live stock is fully up to the average in condition. Pastures and mowings promise well. Fall seeding wintered well. Apples had an extra bloom, peaches were a failure, the rest average. Very few insects have appeared. Farm help is plenty, one in a hundred being good help. Wages run from $14 to $20 per month with board and from $25 to $40 without. The acreage of farm crops has slightly increased.

Avon (S. F. Oliver). — The present season compares very favorably with last year. Live stock is in good condition. Pastures are looking extra well and grass land will yield an average crop. Fall seeding wintered well. The fruit bloom was full and set well. Farm help is plenty and two-thirds is good help. Wages are $15 to $30 per month with board and $1.75 to $2.00 per day without. The acreage of farm crops has increased.

Cohasset (E. E. Ellms). — The present season compares very well with last year. Live stock is in very good condition. Pastures and mowings are looking well. The fruit bloom was heavier than usual. Farm help is very scarce and there is no good help. Wages are $1.75 per day and $35 per month with board. No change in the acreage of crops.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — The present season is much more favorable than last year. Live stock is in good condition. Pastures and mowings are extra good, and fall seeding wintered well. The fruit bloom was a full average and much better than last year. Tent caterpillars are very scarce, only two nests having been seen. Farm help is plenty. Wages are $20 per month with board and $40 without. There is no change in the acreage of crops.

Raynham (N. W. Shaw). — The season is far in advance of last year in every way. Live stock is in better condition than usual. Pastures and mowings are better than usual. Nearly all fruit trees were full of blossoms. The potato beetle is now appearing. Help is plenty and perhaps one-tenth is good help. Wages are $14 per month with board and $28 without. More ground would have been planted but for the industrial depression.

Dighton (A. W. Paul). — The season is ten days earlier than last year. Live stock is in good average condition. Grass is scattering and hay will be light. Fall seeding wintered well. Fruit had a very full bloom. The cut worm is doing the most damage. One man set 4,000 tomato plants and has reset more than 1,000. Farm help is scarce, being mostly Portuguese and other foreigners. Very little really good help. Wages are $16 to $22 per month with board and $1.25 to $1.50 per day without. There is little change in the acreage of farm crops. Strawberries, our money crop, are not promising as well as usual. It has been unusually dry but recently we have had copious rains.

Berkley (R. H. Babbitt). — The season is about a week in advance of last year. Frost and dry weather have injured many crops. Live stock is in fair condition. On high land grass is

light. Fall seeding wintered well. Apples and pears bloomed very heavy. Wild cherry trees by the road side have been cut to prevent the spread of caterpillars. Farm help is very plenty, about one-half being fair to good. Wages are from $12 to $18 per month with board and $1.25 per day without. The acreage of farm crops has been increased.

Dartmouth (L. T. Davis). — The season is not much different from last year. Live stock is in very good condition and wintered well. Pastures and mowings are very fair and fall seeding wintered well. The fruit bloom was much heavier than last year. Insects are less troublesome than usual. Not more than one-half the help is good help. Wages are from $15 to $25 per month with board and $1.50 per day without. There is very little if any change in the acreage of farm crops.

PLYMOUTH COUNTY.

West Bridgewater (F. E. Howard). — The season is about ten days earlier than last year and favorable for all crops. Live stock is in very good condition. Pastures and mowings are forward but light, having been injured by dry weather. The fruit bloom was not an average. Canker worms are doing the most damage. Farm help is plenty, not one in three being good help. Wages are $20 per month with board and $1.50 per day without. The industrial depression has made little difference with the acreage of crops but if anything has decreased it.

Lakeville (Elbridge Cushman). — The season is very favorable and a week earlier than last year. Live stock is in good condition. Grass is looking finely and fall seeding wintered well. The fruit bloom was never better. Canker worms are doing the most damage and spraying is being done. Farm help is plenty and of better quality than usual. Wages are from $16 to $20 per month with board and from $30 to $35 without. The industrial depression has had little effect upon farmers in this vicinity.

Brockton (Davis Copeland). — The season is slightly in advance of last year. Live stock is in good condition. Pastures and mowings are good and fall seeding wintered well. The fruit bloom compares well with former years. Canker worms are doing the most damage. Farm help is plenty and one-eighth is good help. Wages are $1.50 per day without board and from $12 to $20 per month with board. The acreage of crops has slightly increased.

Halifax (G. W. Hayward). — The season was forward but frosts and drought have retarded it very much. Stock of all kinds is in the best of condition. Pastures and mowings are very

promising indeed. The fruit bloom is more than average. Not one in ten of the farm help can be called good help. Wages are $20 per month with board and $1.50 per day without. The acreage of crops has been increased.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — The present season is a week ahead of last year. Live stock is in good condition. Pastures started early but dry weather hurt them. Mowings are in poor condition. Fall seeding all right. The fruit bloom was larger than for years. The potato beetle and the tent caterpillar are doing the most damage ; the latter are not plenty. Farm help is scarce and not one in five is good help. Wages are $1.00 per day with board and $1.25 to $1.50 per day without. The acreage of farm crops has increased.

Mashpee (W. F. Hammond). — The present season is rather better than last year. Live stock is healthy and in better condition than last year. Pastures and grass lands promise well. Fall seeding wintered nicely. Fruit trees bloomed well and small fruit bloomed much better than usual. Cut worms and currant worms are doing the most damage. Help is plenty and three-fourths of it good help ; with board $28 per month is paid, without board $1.50 per day. The industrial depression has increased the acreage of crops.

Barnstable (John Bursley). — The present season is not equal to last year. Live stock is in average condition. Pastures and mowings are light because of drought. Fall seeding looks fairly well. The fruit bloom was an average. Canker worms and tent caterpillars are doing the most damage, and a little spraying is being done. Farm help is more plenty than usual, with 10 per cent good help. Wages are $17.50 per month with board and 15 cents per hour without. The acreage of crops has been slightly increased.

Brewster (J. H. Clark). — The present season is a little later than last year. Live stock is in very good condition. Pastures and mowings are below average, but fall seeding wintered well. Fruit bloom was above the average. Tent caterpillars are doing the most damage and they are fought by burning the nests. Farm help is plenty, seven-eighths being good. Wages are 15 cents per hour without board. Very few are employed with board. The acreage of farm crops is perhaps slightly increased.

Eastham (J. A. Clark). — Season ten days earlier than last. Live stock, pastures and mowings in good condition. Very full fruit bloom. Cut worms are more troublesome than usual to as-

paragus and other crops. Farm help is about up to requirements and $1.50 per day is the usual price. Asparagus is being marketed and is a good crop. The prices realized are better than last season and farmers are feeling good as this is an important crop in this town. More potatoes planted than usual and they are looking well.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — The season is in some respects earlier than last year. Live stock is in good average condition. Pastures promise well, mowings are a good average on new seeded land and below average on old land. Fall seeding did well. The fruit bloom was much earlier than last year. There is little damage from insects. The supply of farm help is about equal to the demand and one in ten is good help. Wages range from $8 to $25 per month with board and $1.50 per day without. There is no difference in the acreage of farm crops because of the depression.

NANTUCKET COUNTY.

Nantucket (Chas. W. Gardner). — The season is not as good as last year because of dry weather. Live stock is in very good condition. Pastures and mowings promise poorly because of drought. Fruit bloom the best for years. About one-tenth of the help is good help. Wages are from $10 to $25 per month with board. The acreage of corn and potatoes has increased.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

POMOLOGICAL.

To Fruit Growers, Dealers and Consumers.

The material interests of fruit growers, dealers and consumers in any community are largely dependent upon the prosperity of each other.

The larger the quantity and the better the quality of any kind of fruit offered, the more the consumer will buy; the more fruit grown and sold, the better able the grower will be to so systematize his business as to produce at a cheaper rate, and the greater the consumption the cheaper the rate at which the dealer will be able to do his part of the work of moving the product from the hands of the grower to the consumer.

Fresh, ripe, home-grown fruit is more attractive, better in quality, more healthful and cheaper than that shipped from southern or western growers.

That fresh, ripe, home-grown fruit is more attractive, of better quality and more healthful, needs no argument to prove; that it is worth much more to the consumer, who therefore can afford to pay a higher price for it, can be easily demonstrated.

Take the item of grapes shipped from New York State to our own markets. A ten-pound basket of Concord grapes is bought for twenty-five cents, about the lowest rate at which they are retailed, and it is found that if freshly packed it contains about seven pounds of grapes, but if it has been packed for several weeks, as is generally the case, by the evaporation of the berry and stems the weight of fruit is reduced to less than six pounds and it has lost much of its fresh, invigorating qualities. Besides this, if any of the berries are crushed in packing, as some are sure to be unless packed by very skilful hands, decay soon sets in and much of the fruit is spoiled or the heat generated in the basket causes the berries to drop from their stems.

In the above condition this six pounds or less of grapes is not worth one-half as much as fresh, well ripened, home-grown fruit with its invigorating qualities and the natural bloom upon it, as it is when taken from the package of the local grower. Comparing this fruit at its actual cost to the consumer with the local production, leaving out the consideration of its unhealthfulness, we can safely say that the home-grown product is worth from five to seven cents per pound, at which prices grape growing in New England would be one of the most profitable branches of horticulture we could follow.

The above conditions apply with much greater force to other and more perishable fruits like the peach, strawberry, raspberry and blackberry.

The peach comes to us from the south in a half-decayed condition. There it must be picked long before it is ripe in order to ship it to us, and we find that the basket of fruit that we pay from 75 cents to $1.50 for gives us only about one-half of a basket of serviceable fruit, and that a full basket equal in quantity to a basket that we would get from the local grower would cost us from $1.50 to $3.00 per basket. The native product, on account of its superior quality and freshness, is worth far more to the consumer than the unwholesome imported fruit, and our growers should have the benefit of this difference in price as well as in an increased consumption.

The strawberry, raspberry and blackberry often comes to us from the south in a much less satisfactory condition than even the peach, and as soon as the native crop comes to our markets there should be no place or demand for such products.

Poor fruit lessens the demand as well as the price, while good fruit increases both. The more good fruit people have the more they want, while poor fruit of one kind causes people to look for other and better kinds. If peaches are poor, raspberries, blackberries, grapes, pears, etc., are in demand.

The above considerations lead us to the conclusion that the grower and dealer should combine forces in order to supply the consumer with wholesome, fresh fruit at a fair price, and that the consumer should demand and buy only such fruit, that more and better fruit may be grown to the mutual benefit of all.

To do this *mutual understanding* is necessary, the grower and dealer endeavoring to put on the market only the amount that will be consumed each day. Only the best should be sold in the local market, the surplus and the lower grades being shipped or sold for canning purposes.

Massachusetts has thousands of acres of land upon which, with *equal skill* and *business enterprise*, the perishable fruits can be as cheaply grown as in the south.

Here the peach has produced paying crops on an average two years in five; the grape crop is sure to ripen on land suited to its growth four years in five; the raspberry and blackberry, with a little protection, will produce a paying crop every year, and the strawberry, except in cases of late frosts and extreme drouth, seldom fails to produce a profitable crop.

The fact that our markets are "at our doors" gives us a great advantage in the competition with imported fruit, and should enable us to produce better fruit at equally low prices and still leave a larger margin for profit than the southern grower can possibly have.

Viewed in this light, we would urge all growers and dealers *to make an earnest effort to show the consumers that home-grown fruit is far better, more healthful and cheaper than that shipped in from a long distance, and that it is far better for them to wait for the home-grown product, which is at once more healthful and palatable and cheaper, than to purchase that which is neither wholesome nor palatable.*

S. T. Maynard,
Pomologist.

SERIES OF 1894. BULLETIN NO. 2.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF JUNE, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

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Crop Report for the Month of June, 1894.

Office State Board of Agriculture,
Boston, Mass., July 2, 1894.

Bulletin No. 2, Crop Report for the month of June, is herewith presented. Particular attention is called to an article at the end of this bulletin on Tuberculosis and its Eradication, by the Veterinarian of this Board.

Progress of the Season.

Report No. 115 (May, 1894) of the Statistician of the United States Department of Agriculture states that winter wheat has fallen off 5.3 points since the April report, caused by drought, cool weather and high winds.

Winter rye, like winter wheat, has suffered a decline since last month, the average for May 1 being 90.7 against 94.4 in April.

The average condition of barley is 62.3 against 86.6 last year. The low condition is the result of the drought in California.

The planting of cotton was late, owing to continued cold weather, and germination has been slow and growth of plants backward. Meadows enter the present season with an average condition of 91.7. The drought of last year and the sudden freeze of the last of March are the main causes of impairment. The latter was particularly destructive to young clover. The injury occurred principally in the South, in States bordering on the Ohio River and the lower Mississippi valley.

The present season has been particularly favorable for all spring work and the proportion of plowing done May 1 is returned as 83.5 per cent. The proportion usually completed by this date is 77.8 per cent. At this time the ground is

reported in excellent condition for seeding and planting. The average condition of pastures is 92.7. The winter was mild and but little damage to grass from freezing until March. The cold wave which swept over the country in the latter part of that month suddenly checked all growth. In the South all vegetation was far advanced for the season, and the injury to pastures in that section was great.

Broadly stated, the main influences inducing changes of acreage the present season are the unprecedented low price of wheat and cotton, the generally good price of potatoes and the March freeze.

The abandoned wheat area will be planted principally to corn, the high price of pork encouraging the production of this staple. Corn will be substituted largely for the oats and intended clover area killed by the freeze of March. Correspondents note an increased interest in sugar cane in the South and in the sugar beet on the Pacific coast. Throughout the East a decided increase in the acreage of potatoes is reported.

Previous to the last week of March the prospect was good for a full crop of most fruits, except in the middle and lower Mississippi Valley States, including Kansas and Ohio, where peaches, early blooming pears and plums, and some small fruits had been badly injured by low temperature in January, following a period of unseasonably warm weather. In New York and Connecticut, also, severe cold in January and February had killed 50 to 75 per cent of the peach buds. From advice received up to May 1 it is concluded that there will be but few peaches in the commercial orchards lying east of the Rocky Mountains and south of Pennsylvania, except in Florida, where a full crop is expected. Within this region, also, early blooming plums, pears, cherries, etc., are badly damaged, as are grapes. Small fruits suffered considerably, but will yield a partial crop. North of the southern boundary of Pennsylvania less damage was done and the outlook for peaches is fairly good. Other fruits than the peach are little damaged north of the latitude of Philadelphia and there is good prospect for fair crops. On the Pacific slope no serious injury to either buds or young fruit has been reported and the outlook is good for a full crop of all kinds.

In Report No. 116 (June, 1894) the statistician gives the acreage of winter wheat sown, compared with that which was harvested last year, as 99 per cent. There is an increase of acreage, as compared with 1893, in but nine States. The condition of winter wheat is reported as 83.2 and spring wheat as 88. Winter wheat has been injured by chinch bugs, army worm, fly, rust and cold weather.

Acreage of oats about as last year, with condition at 87 against 88.9 last June. Acreage of barley 98.5 per cent of that of last year with condition 82.2 against 88.3 last year. The general condition is due to unfavorable weather. California, which produces more barley than any other State, has the very low percentage of 58. The acreage of rye is 95.3 per cent of that of last year. Average condition, 93.2. Condition is high in the East and generally good in other States of large production.

The returns of clover show a reduction of 3.8 per cent from last year's area, the general average of condition being 87.8. Freezing weather, chiefly during March, and the ravages of insects are among the principal causes of reduced area or impaired condition.

Average condition of spring pasture, 92. Condition generally high in New England, in all the States which border on the Great Lakes from New York to Minnesota, inclusive, and to those lying along our northern boundary from Lake Superior to the Pacific.

The condition of peaches is generally low and the crop promises to be practically a failure. The best prospects east of the Rocky Mountains are in New Jersey (65) and in Michigan (70). The condition in California (85), by reason of the advanced state of growth in that favored locality, stands for a good crop.

The condition of apples is somewhat better than that of peaches. In sections of New England, where the season is far enough advanced for the fact to be determined, a fine set is reported and prospects are unusually promising. In New York trees have bloomed full, but some counties report damage from frost and cold rains. A sudden decline in the condition begins with New Jersey and Pennsylvania, due to the causes just stated, and the increased damage from the freez-

ing weather of March, as we go south, is clearly indicated. Prospects in the West are fair to good. Utah reports an act of the legislature compelling orchardists to spray their fruit trees. A very rapid extension of orchards is being made in Washington.

The breadth of rice seeded in 1894 is but 76.4 per cent of last year's acreage; principal cause is the ruling low price. Average condition is 97.1.

Temperature and Rainfall for the Whole Country.

From United States Weather-Crop Bulletins.

Week ending June 4. — Much cooler than usual throughout all agricultural districts east of Mississippi River. Also cooler than usual from lower Mississippi westward over southern Rocky Mountain districts and southern California. Light frosts as far south as Northern Alabama. Week warmer than usual from Nebraska and North and South Dakota westward to north Pacific coast. Week unusually dry over cotton region east of the Mississippi and over all the principal corn States and the spring wheat region. Slight excess of rainfall along Atlantic coast north of Hatteras, N. C., including New England. Excessive rains on north Pacific coast. Floods in portions of Washington and Oregon.

Week ending June 11. — Averaged cooler than usual throughout entire country, with exception of region extending from eastern Montana and Wyoming to the upper Lakes, and over a small area covering western portions of Carolinas, where it was warmer than usual. Light frosts in portions of New England, Ohio valley and Lake region. Rainfall generally deficient. Drought prevails from south Atlantic coast westward to Mississippi valley and thence northward to upper Lake region. Floods continue in Montana.

Week ending June 18. — Much warmer than usual from New England westward over Lake region, the Ohio and upper Mississippi valleys and the Dakotas. Normal temperature from New York southward to Florida and generally throughout Southern States. Cooler than usual throughout Rocky Mountains and plateau districts and over greater portion of Pacific coast States. More than usual amount of rain in

Texas and over greater portions of Kansas, Nebraska, Michigan, Wisconsin and New York and in limited areas in other States. Drought conditions generally broken.

Week ending June 25. — Warmer than usual in Northern States east of Rocky Mountains and from Virginia westward to Missouri. Over greater portion of Southern States temperature about normal. Week cool in all States west of Rocky Mountains. Rainfall in excess over Kansas and Nebraska, over small areas in Lake region and upper Ohio valley, and over greater portion of east Gulf States and Florida. Rainfall very light in southern New England and Middle Atlantic States and in southern portions of Missouri and Illinois. Generally week favorable throughout cotton and corn regions.

New England Weather and Crops.

From United States Weather-Crop Bulletins.

Week ending June 4. — Cold, cloudy and wet, preventing completion of planting on low lands; much seed rotting and crops growing slowly; grass and grain very promising; fruit generally making good set; tobacco setting begun, with decreased acreage.

Week ending June 11. — Temperature, precipitation and sunshine below normal; cold nights first of week, with light frosts, little damage; last two days very warm and all crops improving; early potatoes showing fine growth; oats rusting in Connecticut.

Week ending June 18. — Little precipitation; much sunshine; temperature below normal in eastern Maine and above elsewhere; excessively hot last part of week, and crops wilting on light soils; all crops have made rapid progress; grass maturing fast.

Week ending June 25. — Warm and average sunshine with heavy frequent showers in north portion and little or no rain in south; favorable weather for crops, except where being injured by drought; haying begun in south, with light crop in old fields; meadows better.

Massachusetts Weather.

Meteorological Data for June, 1894.

[Furnished by the New England Weather Service.]

Station.	Temperature. Deg. F.					Precipitation.		Prevailing Wind.	Cloudiness. No. of Days.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Clear.
Pittsfield,	64.1	86	19	36	8	2.00	11	–	–	–	–
Springfield,	70.4	96	17	42	8	2.06	8	–	–	–	–
Amherst,	67.5	93	17	37	8	3.43	8	S.W.	14	8	8
Turner's F'ls,	68.7	92	17	40	8	2.37	5	–	–	–	–
Fitchburg,	67.5	95	17	40	5	1.00	6	S.	8	8	14
Worcester,	67.5	91	17	44	6	0.73	5	N.	12	13	5
Framingh'm,	69.0	95	17	42	6, 7	1.11	5	–	–	–	–
Lowell,	70.4	103	17	43	8, 14	–	–	S.W.	4	24	2
Boston,	68.8	95	17	47	6	0.80	6	S.W.	6	20	4
Taunton,	67.7	95	17	39	14	1.13	9	S.W.	14	8	8
New Bedf'd,	65.4	90	11	45	7	0.90	9	S.W.	10	15	5
Hyannis,	68.7	96	23	46	8	0.43	8	S.W.	5	10	15
Provincet'n,	65.9	94	23	42	14	0.70	6	S.W.	8	13	9

Summary.

Temperature (F.).—Monthly mean, 67.8°; highest monthly mean, 70.4° at Springfield and Lowell; lowest monthly mean, 64.1° at Pittsfield; maximum, 103° at Lowell on the 17th; minimum, 36° at Pittsfield on the 8th; range, 67°; greatest local monthly range, 60° at Lowell; least local monthly range, 35° at New Bedford; greatest daily range, 42° at Framingham on the 14th; least daily range, 3° at Boston on the 24th. At Springfield the mean temperature averaged 1.8° per day above the normal; at Fitchburg it was 0.1° above; at Boston, 2.4° above, and at New Bedford 0.4° below.

Precipitation. — Average, 1.39 inches; greatest amount, 3.43 at Amherst; least, 0.43 at Hyannis. At Springfield the total precipitation was 1.70 inches below the usual amount for June; at Fitchburg it was 1.75 below; at Boston 2.32 below, and at New Bedford 2.23 below.

Prevailing Wind. — South-west.

Thunder-storms. — 4th, 7th, 11th, 21st, 23d, 30th.

Hail. — 4th at Hyannis at 7.30 P.M.

Remarks.

In most of the western counties frequent and generally sufficient showers have occurred during the month, and with the high temperature and sunshine crops have made a good growth and are forward. But very little rain has fallen anywhere in the eastern part of the State, as will be seen by the above table and summary, and in places the drought is assuming very serious aspects. The crop correspondent at Woburn reports no rain at all during the month, and in the greater part of the Sudbury River valley the fall was practically nothing. At Provincetown there was no rain from the 7th to 27th inclusive, except a trace on the 20th and 21st, making the longest period without a measurable quantity of rain in the past fourteen years. The maximum temperature at Provincetown was the highest ever recorded in June. The spell of continued high day temperatures was almost unprecedented in some eastern sections, but the free radiation of heat at night, because of the general absence of clouds, made the night temperatures moderately low, thus lowering the daily mean temperatures and also the mean for the month. Light frost occurred on the morning of the 14th in the south-east, doing some damage to gardens and to cranberry bogs.

In the circular to correspondents returnable June 30 the following questions were asked : —

1. What insects are doing the most damage in your locality?

2. How is Indian corn looking, and what is the acreage as compared with previous years?

3. How is haying progressing, and what is the prospect for the crop?

4. How does the acreage of early potatoes compare with previous years, and do they promise a full average crop?

5. How have early market garden crops compared in yield and price with former years, and what is the prospect for those not yet harvested?

6. How do dairy products compare in quantity and price with last year, and what is the condition of dairy stock as regards health?

7. What is the condition of pasturage in your vicinity?

8. What is the outlook for such fruits and berries as are grown for market in your locality, naming them?

Returns were received from 107 correspondents, and from these the following summary was made : —

Insects.

The potato beetle appears to be the only insect which is generally prevalent, nearly every correspondent reporting its ravages to some extent. Rose bugs have done considerable damage in certain localities, but in most towns they have not appeared in such numbers as to become particularly troublesome. Other insects reported as committing depredations are currant worms, cabbage worms, wire worms, onion maggots, canker worms, squash bugs, grasshoppers, cut worms and the curculio. In no case, however, have their ravages become particularly serious. Only three reports of the presence of the horn fly have been received.

Indian Corn.

Indian corn is generally reported as looking well, though backward. The cold weather held it back for some time, but since the coming of warm weather it has come forward

rapidly and is now doing well. Color is generally reported to be good, but some correspondents speak of the stand as uneven and poor. There seems to be a quite general though slight increase in acreage, many correspondents speaking of the acreage as increased, and nearly all of those remaining speaking of it as average. Very few reports of decreased acreage have been received.

The Hay Crop.

At the time of making returns, haying was in most localities just commencing, though quite a number of correspondents spoke of it as not yet begun, and a very few as well under way. The crop will undoubtedly be light in most sections, though some speak of it as average and others as good. New seeding and wet lands will range from average to very good, while old fields and those on light land will in most cases be either light or very light.

Early Potatoes.

The acreage of early potatoes, like that of Indian corn, is quite generally increased, some putting the increase as high as one-third or one-half. They are generally reported to be looking well, and to promise a good crop, though many correspondents state that unless rain comes soon the crop will be shortened in their localities. With a fair amount of rain, a good crop may be expected in nearly all sections. Blight has appeared in two instances, but is not yet serious.

Market Garden Crops.

Early market garden crops were generally a fair yield, though injured by cold weather in many cases. Prices seem, on the whole, to have been somewhat lower than usual, though generally the decrease has been but a slight one. As far as can be ascertained from the meagre returns on this subject, the prospect for late crops is good.

Dairy Products.

Dairy products appear to be average in quantity, but many reports of decreased prices have been received; enough, in fact, to warrant the statement that there has been

a slight but general decrease in the prices received for all dairy products. This is particularly true of butter, one correspondent speaking of it as "a drug," and another characterizing the sale as "the slowest for years." Stock is universally spoken of as being in good health, and its condition is also said to be good in most cases.

Pasturage.

While many correspondents speak of pastures as in good condition, the majority speak of them as short, dry or badly in need of rain. Some say that they have been good, but are now beginning to feel the drought. A correspondent in Worcester County says: "Bare as in October; in ordinary pastures dry as the road." Rain is undoubtedly much needed in most sections.

Fruits and Berries.

Generally speaking, the outlook for fruits and berries is fair. Strawberries were a fair crop, though suffering from frost and drought in many sections. Currants are a good crop, and cherries are abundant. Blackberries and raspberries promise well, but need rain. The peach crop will be nearly a failure. Pears and plums promise fair crops. Apples are uneven, but a fair crop is expected for the State as a whole. Cranberries are reported to have suffered from frost. Wild berries are generally spoken of as abundant and promising.

NOTES OF CORRESPONDENTS.

(Returned to us June 30.)

BERKSHIRE COUNTY.

Sheffield (Dwight Andrews). — Potato bugs and rose bugs are doing the most damage. Corn is yellow and needs rain; acreage full average. Little haying done and crop light. Early potatoes are a full average acreage, but do not promise well, owing to dry weather. Early market garden crops were about average. Dairy products are a little under the average in quantity and price; stock in good health. Pasturage in very good condition. Apples and pears are dropping badly. Strawberries, raspberries, blackberries and blueberries promise a fair crop.

Becket (W. H. Snow). — Potato bugs are doing the most damage. Corn is late, but the color is good; acreage average. Haying not yet begun; prospect good for a fair crop. Early potatoes full average acreage and are looking well. Dairy products short in quantity and not quite up in price; stock in good condition. Pasturage is very good. Strawberries, raspberries, blueberries and blackberries promise well.

Lee (A. Bradley). — Potato bugs are doing the most damage. Indian corn a little backward, but good; acreage a full average. Very few have commenced haying; crop average. Dairy products are about the same as last year in quantity and price. Stock is in good health. Pasturage is a little short.

Stockbridge (F. A. Palmer). — Corn late, but growing finely; acreage quite materially increased. Few have cut any grass yet; crop early and light, but late rains are helping it. Usual amount of potatoes planted and doing well. Market garden crops are late, but looking well and growing fast. Dairy products about the same in quantity; prices a shade lower; stock doing well and healthy. Pastures have been short, but are improving. Strawberries are doing well; cherries, pears and apples promise a good crop.

Dalton (W. B. Barton). — Potato bugs are doing the most damage. Indian corn is looking fair; acreage increased one-third. Haying has just commenced, with a three-fourths crop. The acre-

age of early potatoes is larger than usual and they promise a good crop. The yield of early market garden crops is good and prices somewhat lower than usual. Dairies are doing well and stock is in good health. Pasturage is in good condition. Raspberries and cherries promise well.

Cheshire (L. J. Northup). — Potato bugs are doing the most damage. Indian corn is backward, but of late is pushing ahead fast. Haying has just started, with 90 per cent of a full crop. Early potatoes promise a fair crop, but need rain greatly. Dairy products are less in quantity by one-fifth; stock in good health. Pastures are dry. Strawberries are very plenty and blackberries promise a large yield.

FRANKLIN COUNTY.

Monroe (D. H. Sherman). — Potato bugs are doing the most damage. No Indian corn was planted in this section. Haying not begun; new seeding looks well, but old fields are thin. More potatoes planted than usual and they are looking well. Dairy products average in quantity and lower in price; stock in good condition. Pasturage very fair. Apples dropping badly; wild berries promise fair.

Charlemont (H. S. Giles). — Currant worms and potato bugs are doing the most damage. Indian corn about an average. Haying progressing slowly and the crop will be above the average. Acreage of early potatoes about average and prospects for a large crop. Early market garden crops are about as last year in yield and price. Dairy products equal last year in quantity, not quite up in price; dairy stock very healthy. Pasturage in very good condition. Fruits and berries about in average condition.

Deerfield (Chas. Jones). — The potato bug is doing the most damage. Corn small, but coming forward rapidly; acreage about as usual. Haying commenced, with a three-fourths crop. Potatoes looking well and about one-third more planted than last year. Oats are looking fair, but have rusted some. Rye looking well and is forward. Tobacco is all set and looking fairly well. There is little rain, but the weather is poor for haying.

Northfield (Chas. Pomeroy). — The potato bug is doing the most damage. Corn is very backward, but of good color; acreage same as usual. Haying has just commenced and old fields are very light. Early potatoes have an increased acreage, but the prospect is not average. Early market garden crops are not as good as usual. Dairy products are full average in quantity, but prices have fallen off 10 per cent; stock very healthy. Apples, blueberries and blackberries look well. Most crops are suffering from the dry weather.

Montague (C. S. Raymond). — Indian corn looking fairly well but backward; acreage same as last year. Haying progressing slowly, with about an average crop. There is a slight increase in acreage of early potatoes and the crop is average. Early market garden crops about the same as usual in yield and price, and the prospect for later ones good. Quantity of dairy products about the same; price two to three cents less; stock healthy. Pasturage about average. Berries are nearly a failure.

Orange (Ansel Harrington). — Potato bugs are quite numerous and grasshoppers just coming on. Corn is small and backward; acreage about average. Very little haying done; prospect of a light crop. Acreage of early potatoes same as usual, but the prospect poor for an average crop. Early market garden crops were light in yield and prices low; prospect poor for those not harvested. Dairy products below last year in quantity and price. Pastures are dry and feed short. Outlook poor for all fruits except apples, and they are falling off badly.

HAMPSHIRE COUNTY.

Belchertown (H. C. West). — Indian corn is looking fairly well, the acreage being increased 10 per cent. Haying has hardly commenced and the crop will be light. Early potatoes are a full average acreage and are looking finely. Early market garden crops are not quite up to the average. Dairy products are short in quantity and the price is less than one year ago; stock in good condition. Pastures are very short. Apples, pears and peaches are short. Currants fine; huckleberries, blackberries and raspberries now promise a full crop.

Pelham (J. L. Brewer). — Potato bugs and wire worms are doing the most damage. Indian corn looks well, though not far advanced. Haying is just commencing, with about a four-fifths crop. Early potatoes promise well. Market garden crops are in good condition; little raised. Prices for dairy products good; stock in good condition. Pasturage in good condition. Wild blueberries and huckleberries promise well.

Hadley (L. W. West). — Potato bugs are doing the most damage. Indian corn is looking well and the acreage is fully up to previous years. Haying is progressing slowly and the crop is light.

The acreage of early potatoes has increased 10 per cent and the crop will be good if rain comes soon. The yield of early market garden crops was very good, but the market was dull. Dairy products were smaller in quantity, with price about the same; stock in good health. Pastures are in need of rain. Blackberries and raspberries will be good if we have rain.

Northampton (D. A. Horton). — Potato bugs are doing the most damage. Indian corn is looking very well. Haying began one week earlier than usual. Early potatoes look very well. Early market garden crops have been good and prices have ruled high. Dairy products are about as last year; stock is looking well. Pasturage is good. Strawberries yielded well and blackberries look well.

Chesterfield (Horatio Bisbee). — Potato bugs are numerous. Corn is backward but is doing well now; ordinary acreage. Not much haying done yet and the crop will not be heavy. Dairy products are average in quantity and prices somewhat below average. Pastures and stock are looking well. Early cold dry weather damaged all planted crops and made them uneven and backward. Some fields of grass suffered from frost so that they will not head.

HAMPDEN COUNTY.

Tolland (F. T. Moore.) — Potato bugs are doing the most damage. Indian corn is late but growing well now; acreage increased. Very little haying done and the crop short. Early potatoes did not come up well. Dairy products are full in quantity with the price lower than usual. Pasturage good. It is very dry and rain must come soon or all crops will be short.

West Springfield (N. T. Smith). — The early potato bugs were kept in check by a very lively steel-blue beetle which killed large numbers. Corn has grown very rapidly and is looking finely; slight increase in acreage. Little haying done because of poor weather; about a three-fourths crop. Early potatoes increased 10 per cent in acreage, looking well but now need rain. Early market garden crops suffered first from dry and cold weather and are now suffering from heat and drought. Dairy products are ahead of last year in quantity and lower in price; stock in good health. Pasturage is below average because of drought and grubs. All berries and fruits except peaches are promising.

Agawam (R. De Witt). — The potato bug is plenty but web worms are scarce. Haying is just beginning and the crop is below the average. The volume of milk is larger and the price less than last year. It looks like a good crop of peaches in spite of predictions to the contrary.

Hampden (John N. Isham). — Squash and potato bugs are doing the most damage. Indian corn is growing finely, acreage full average. Haying has just commenced; crop light on dry land but new seeded is good. Early potatoes have an increase in acreage of one-fifth and promise a good crop. Dairy products are a full

average in quantity but the price is considerably lower. Pasturage looks well but is beginning to be short.

Monson (A. H. White). — Potato bugs, cucumber and squash bugs are very plenty. Indian corn is growing fast; acreage about the same. Haying commenced with a very light crop. More early potatoes have been planted than usual, but dry weather will shorten the crop. Dairy products are lower in price than usual; cows are looking well. Pasturage winter killed and feed is short and poor. Strawberries are doing fairly well.

Brimfield (S. W. Brown). — Indian corn is fair but the drought is hurting it. Haying is progressing well with not over a two-thirds crop. Drought preceded by frosts makes the prospect for early potatoes poor. Dairy products are not up to last year in quantity and price; stock in fair condition. Pasturage is fair on damp lands, poor elsewhere. Apples blossomed fairly, but the frost killed many blooms.

WORCESTER COUNTY.

Southbridge (G. L. Clemence). — Potato bugs are doing the most damage. Corn is of good color and fair size; acreage about as last year. But little haying has been done and the crop is not as good as last year. Early potatoes are an average crop though not quite so good as last year. Dairy products abundant, but a little lower than a year ago; stock healthy. Pastures are poor from lack of rain.

New Braintree (C. D. Sage). — Potato bugs and cut worms have done much damage. Acreage of Indian corn about as usual but crop backward. Little haying done; grass is still growing but the crop will be light. Rather more early potatoes than usual were planted and they are looking well though a little backward. Butter is the lowest in price and slowest in sale for many years; stock in good health. Pasturage is rather poor, having suffered from drought. Apples and pears promise well.

Templeton (Lucien Gove). — Potato beetles, curculio and squash bugs are doing the most damage. Indian corn is very uneven and backward; acreage average. Very little haying done; crop light, especially on old fields. Acreage of early potatoes rather larger than usual but they do not promise a full crop. Early market garden crops were average in yield; prices below average; later ones promise well with sufficient rains. Dairy products full average in quantity but prices lower than for several years. Pasturage has been good but is now in need of rain. Apples good; pears below the average; no peaches; plums and cherries dropping badly;

strawberries light; currants average; raspberries and blackberries fair.

Winchendon (W. H. Sawyer). — Indian corn is looking well but backward; acreage about average. Haying hardly begun and the crop light. Rather more early patatoes than usual planted and they are looking well. Early market garden crops about average in yield and price. Dairy products average in quantity and price; stock healthy and looking well. Pasturage is poor, poorer, poorest. Small fruits find a ready sale.

Bolton (H. E. Babcock). — Canker worms are doing the most damage. Indian corn is not quite up to the average and the acreage is less than last year. Little haying done as yet; prospect not as good as last year. More potatoes planted than last year and a full average crop promised. Early market garden crops an average yield, with prices a little below. Dairy products the same as usual in quantity; prices a little lower; most stock in good health. Pasturage has been short; but showers have started it up. Strawberries good; raspberries not promising as well; blackberries looking well; apples promise well; no peaches and but few pears; plums about average.

Worcester (S. A. Burgess). — The spittle insect on grass is doing the most damage. Indian corn is looking very well with about an average acreage. Haying is progressing slowly and the crop will be light. Early potatoes are about as last year. Early market garden crops made a good yield but prices were less than usual. Dairy products about average in quantity and price; stock healthy. Pasturage is fair. Apples, pears and blackberries look well. Prices for strawberries and cherries were low.

Westborough (B. W. Hero). — Squash bugs and potato bugs doing the most damage. Corn looking well with acreage about as last year. Little haying done; about a two-thirds crop. Early potatoes are an average acreage with the promise of an average crop. Few market garden crops harvested but prices same as last year. Dairy products do not vary much in quantity and price. Pastures good. Small fruits average; apples a full crop; one-fourth crop of peaches; pears and quinces half a crop.

Sutton (O. P. Johnson). — Potato bugs are doing the most damage. Indian corn about average with acreage nearly the same as last year. Haying not begun but the crop will hardly be average. Early potatoes have an increased acreage and are looking finely. Few market garden crops ready for market, but they are looking well. Dairy products not up to last year in price; cattle remarkably healthy. Pasturage was never better. The outlook is splendid for pears, apples, strawberries, blueberries and huckleberries,

MIDDLESEX COUNTY.

Westford (Arthur Wright). — Potato bugs and rose bugs are doing the most damage. Indian corn has come forward rapidly and is looking well. Haying is just commencing and a good crop will be harvested. The acreage of early potatoes is larger than last year but the yield does not promise to be as good. Early market garden crops about the same as usual. Milk product larger than usual; prices same as last year; stock in good health. Pasturage about the average. Strawberry crop light; blackberries will be light; raspberries and currants look well.

Lowell (C. L. Marshall). — Rose bugs, cut worms and squash bugs are doing the most damage. Indian corn is looking finely; acreage average. Haying is well begun but the crop is light. The acreage of early potatoes is somewhat increased but the yield promises to be small. Early market garden crops are about average in yield and prices lower. Pasturage is poor at present. Strawberries are good on light land; raspberries promise well; blackberries will be a heavy crop; currants average.

Wilmington (C. W. Swain). — Canker worms are doing the most damage. Indian corn is backward and the acreage less than usual. Haying is progressing well with an average crop. Early potatoes below average in acreage and condition. Early market garden crops are poor but the prospect for later ones is fair. Dairy products about average. Pasturage is fair. The outlook for strawberries is good.

Concord (Wm. H. Hunt). — Rose bugs, asparagus bettles and potato bugs are doing the most damage. Corn late but now growing rapidly acreage; about average. Not much haying has been done but the crop will be good. Early potatoes promise well; acreage a little below. Asparagus has sold well and the general yield of market garden crops promises well. Price of milk the same as last year. Pastures are dry. Strawberries were a fair yield; blackberries promise well; peaches no crop; plums fair crop; pears medium; apples a large crop where canker worms have not destroyed foliage.

Winchester (Marshall Symmes). — Canker worms and black squash bugs are doing the most damage. Sweet corn is looking well. Considerable hay already cut; crop average. Early potatoes about average in acreage and now in need of rain. Early market garden crops a good yield; prices low; rain needed to make good crops. Price of milk same as last year; stock healthy. Pastures beginning to dry up. Pears will be good. Strawberries are about gone but the crop was good.

Framingham (H. S. Whittemore). — Potato beetles are more numerous than in former years. Indian corn is looking well but backward. Haying has commenced and the crop is good except on old lands. More than the usual amount of early potatoes have been planted and are looking well. Yield of market garden crops good but prices low. Prices of dairy products are low; stock in good condition. Pasturage is good but needs rain. Strawberries were about a two-thirds crop and prices have ruled high.

ESSEX COUNTY.

Haverhill (Eben Webster). — Squash bugs and canker worms are doing the most damage. Indian corn is looking fairly well; acreage a little less than usual. Haying has begun; crop not quite up to average. Potatoes promise well; acreage slightly increased. Quantity and price of milk the same as last year. Pasturage good as usual. Currants are not a full crop.

West Newbury (J. C. Tarleton). — White grubs and potato bugs are doing the most damage. More corn than usual has been planted and is looking well. Haying is not progressing very fast, but the crop is very good. Early potatoes are looking fine and many were planted. Prices for market garden crops are very low. Stock is in very good condition. Pasturage is very good. Fruits and berries are fair crops but prices are low.

Ipswich (O. C. Smith). — Potato bugs and rose bugs are doing the most damage. Corn has been making good growth; acreage about average. Haying is about one-third done and the crop will be about two-thirds of an average. Potatoes are looking well; acreage less than average. Dairy products about average in quantity; price lower. Pasturage is not more than fair. Apples and pears promise a large crop; peaches and grapes small; strawberries and cranberries an average yield.

Topsfield (B. P. Pike). — Potato and rose bugs are doing the most damage. Indian corn is looking fairly well; acreage about as usual. Haying commenced this week with a light crop. Early potatoes look well; acreage average. Quantity and price of dairy products about as usual; stock in good health. Pastures are at present very dry. Apples good; pears medium; wild berries fair; strawberries injured by frost and dry weather; blackberries looking well.

Danvers (C. H. Preston). — Corn looks well and the acreage is about average. Haying is well under way; light crop except on new seeded pieces. Early potatoes have an average acreage and look well at present though they need rain. Prices for dairy products same as usual. Pasturage in poor condition. Strawberries were a medium crop; currants look well.

NORFOLK COUNTY.

Medway (Monroe Morse). — Potato bugs are doing the most damage. Indian corn is backward with a very poor stand. Haying began early with about 80 per cent of a full crop. Early potatoes have a large acreage but promise to be a full crop. Pasturage is dried and short. Strawberries were a light crop; apples, pears, blackberries, raspberries and grapes look well; peaches will be a short crop.

Franklin (C. M. Allen). — The spittle insect is doing the most damage. Indian corn is backward; acreage 5 per cent above last year. But little hay is cut; old fields light crop; new-seeded medium. Early potatoes a little above average in acreage; crop will be light unless rain comes. Yield of early market garden crops light; prices average; prospect poor on account of drought. Dairy products are average in quantity and price. Pastures are dry. Blackberries and raspberries may be a good crop with early rains.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — Rose bugs are doing the most damage. Indian corn is looking well; acreage about as usual. Haying progressing favorably with about 90 per cent of an average crop. Early potatoes about average in acreage; suffering from dry weather, and crop will be small unless rains come soon. Early market garden crops generally good but prices low; prospect for late crops poor. Dairy products about as last year dairy stock healthy. Pasturage has been good but is now suffering from drought. Strawberries have been good; currants under average; gooseberries a good crop; raspberries and blackberries good but need rain; pears half a crop; no peaches; apples 75 per cent of full crop.

Raynham (N. W. Shaw). — Rose bugs and potato bugs are doing the most damage. Indian corn is now looking very well. Not much haying done on account of unfavorable weather, and not an average crop. Acreage of early potatoes larger than usual and the prospect favorable for a good crop. Yield of early market garden crops less and prices much lower. Very little change in dairy products. Pasturage is in better condition than usual. Apples not looking well; pears very few; grapes are suffering from the rose bugs.

Berkley (R. H. Babbitt). — Potato bugs, rose bugs and canker worms are doing the most damage. Corn is looking well, with about an average acreage. Haying has just commenced, with pros-

pect of a light crop. The acreage of early potatoes is larger than usual but frost injured the crop early in the season. Yield of early market garden crops fair but prices below former years. Butter lower in price; milk remains the same; stock in good condition. Pasturage is beginning to fail. Small fruits and berries need rain.

Dartmouth (L. T. Davis). — Potato bugs and canker worms are doing the most damage. Indian corn is looking very well; acreage not as large as some years. Haying started quite briskly with about a nine-tenths crop. Early potatoes looking fairly well. Early market garden crops not up to some years; later crops looking fairly well. No change in dairy products. Pasturage is shortened for lack of rain. Strawberries very poor; currants not over a two-thirds crop; apples set well.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — Rose bugs and squash bugs are doing the most damage. Haying has not commenced but the crop is fair. Early potatoes are about as usual in acreage and promise a fair crop. Early market garden crops were fair with low prices and the prospect is the same for later ones. Dairy products the same as usual; stock healthy. Pasturage is short. Strawberry crop short. Rain is much needed.

West Bridgewater (F. E. Howard). — Potato bugs and rose bugs are doing the most damage. Corn is looking finely. Haying is just commencing; crop below average. Early potatoes about average in acreage and possibly an average crop. Early market garden crops below average in yield but above in price; prospect good for later ones. Milk about as last year; butter less in price; condition of stock good. Pasturage good. Strawberries suffered from drought; currants and gooseberries promise a good crop; raspberries winter killed.

Marshfield (John McGilling). — Corn will be only half a crop on account of dry weather. Hay is fair on low land and poor on high land. Potatoes have rotted in the ground, and will be only half a crop. Market garden crops look well. Dairy stock looks well. Pasturage is looking well. Cranberries injured by frost. Oats have rusted badly.

Kingston (J. H. Cushman). — Potato bugs are doing the most damage. Corn is looking quite well, and the acreage is about average. Hay will be about a two-thirds crop. The potato crop looks small on account of dry weather. Early market garden crops were light and the prices about average. Dairy products fully up

to the average in quantity and price. Pastures are getting short and dry. Early apples look well; strawberries, currants and gooseberries not half crops. Everything suffering from dry weather.

Lakeville (Elbridge Cushman). — Canker worms, rose bugs and potato bugs are doing the most damage. Indian corn is fair, acreage about the same as last year. Haying begun with a four-fifths crop. Early potatoes materially increased in acreage; crop checked by dry weather. Early market garden crops were a small yield and prices fair. Dairy products less than last year in quantity; price the same; stock in good health. Pasturage short. Strawberries were a small crop.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — Potato beetles and striped squash bugs very plenty. Sweet corn is fine, acreage on the increase. Haying not progressing much on account of bad weather. Acreage of potatoes increased, crop uneven. Early market garden crops average in yield and price. Stock in good average condition. Pastures are getting dry and short. Strawberries have been fair; cranberries not very promising on account of frost.

Mashpee (W. F. Hammond). — Girdle worms, cut worms and potato bugs are doing the most damage. Indian corn is rather backward, acreage increased one-fifth. Haying just begun, crop a good average. Early potatoes promise well, with a third more acreage. Early market garden crops average in quantity and price, prospect for later ones good. Dairy products increased in quantity, price the same; condition of stock good. Pasturage very good. Apples, pears and strawberries half a crop; cranberries a one-third crop; currants and raspberries average.

West Barnstable (John Bursley). — The cranberry fire worm and the potato bug are doing the most damage. Corn very small, acreage average. Haying progressing slowly, with a light crop. Early potatoes are average in acreage, but the crop will be small unless rain comes soon. Dairy products much the same; stock healthy. Pasturage suffering from lack of rain. Cranberries will not be as large a crop as last year.

Brewster (J. H. Clark). — Potato beetles and cranberry vine worms are doing the most damage. Indian corn is looking well, acreage about average. Haying is progressing rapidly and the crop is light. Early potatoes are above the average in acreage and are looking well. Early market garden crops are about average but are beginning to suffer from drought. Price of dairy products

as usual and condition of stock good. Pastures in need of rain. All kinds of fruit badly in need of rain.

Eastham (J. A. Clark). — Potato bugs are doing the most damage. Hay is a good crop on low land and very light on dry. Early potatoes have a larger acreage than usual but are in need of rain. Dairy products the same as last year; stock healthy. Pastures are very dry. Asparagus has been very low in price and the yield average.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Potato and squash bugs are doing the most damage. Indian corn is looking well and the acreage is increased. Haying just commenced, crop light. Early potatoes average in acreage and condition. Peas are quite forward but the price is low. Prospect for market garden crops not good on account of dry weather. Dairy products are a good average and stock is healthy. Pasturage is better than average. Apples promise well; strawberries below average.

NANTUCKET COUNTY.

Nantucket (C. W. Gardner). — Potato bugs are doing the most damage. Indian corn is in fair condition, acreage average. Hay is ten days late and about half a crop. Potatoes have rotted badly. Early market garden crops are about average in yield, but less in price on account of surplus production. Dairy products average in quantity but low in price. Pasturage is poor. Blackberries and strawberries are looking finely.

BULLETIN OF

MASSACHUSETTS BOARD OF AGRICULTURE.

VETERINARY.

Tuberculosis and its Eradication.

PART I.

Tuberculosis is an infectious disease, due to the action of a minute living organism upon the cells of the body which it inhabits. The germ produces no other disease than tuberculosis, so has been named *Bacillus tuberculosis.*

The manifestation of the malady exists in the form of larger or smaller nodules or tubercles; hence the name tuberculosis. These in their earliest stages of development are no larger than the smallest shot, but as the trouble develops they frequently coalesce, forming masses the size of an orange, or, in exceptional instances, a child's head.

All domestic animals contract the disease. The bovine are most susceptible, but it has been found in the horse, pig, sheep, goat, in fowls and in members of the human family. In each it is identical and in the latter is commonly called consumption. The fact is established that each may under certain conditions contract it from the other.

It can be produced experimentally in calves and pigs by feeding them material which contains the living germs, such as milk from tuberculous cows.

Such being the case, it is reasonable to suppose that it may be produced in individuals of the human family by the same means. That the milk of affected cows frequently contains the germ has been repeatedly proven by experiment.

While it may be caused by the ingestion of tuberculous milk and meat, it may also be produced by inoculation through the broken skin and by the inhalation of dried germs. This is the usual way by which it is spread. An animal or person having the disease in the lungs coughs up and expectorates material rich in bacilli; this becomes spread about house or stable, the moisture dries out of it and the living organisms, exceedingly small, become attached to particles of dust. These are set in motion by sweeping and dusting or in stables by moving hay, etc.

While floating in the air they are drawn into the lungs with the air, and if conditions exist there favorable for their growth and multiplication, they remain, increasing in numbers, attacking the tissues, producing inflammation and in time the peculiar nodular-like growths which are characteristic of tuberculosis.

The nodules gradually increase in size, finally break down, the "debris" escapes into the bronchial tubes, when by its irritation it produces a cough, by which it is removed. This "debris" from an affected organ containing the germs escaping from the body is the principal means by which the disease is spread from the sick to the healthy. Its destruction by burning or by the use of carbolic acid or corrosive sublimate solutions affords an easy way of checking the spread of this dire disease.

Among favorable conditions for the spread and propagation of this disease may be mentioned *heredity*. While it is extremely rare that tuberculosis is transmitted directly from parent to offspring, the fact that an animal born of such parents is more liable to contract the disease proves that while they do not inherit it, they do inherit a susceptibility of the tissues to favor its contraction and development. In other words the tissues of the body furnish favorable soil for the growth of the germs while the tissues of an animal born of parents not tuberculous do not afford the soil congenial to the organism.

When the bacillus gets into the body of the unsusceptible animal or person, instead of flourishing as it would in the body of the susceptible, rendered so by hereditary predisposition, it dies and produces no harm whatever.

The disease makes the greatest progress among animals kept under bad sanitary surroundings. Badly drained and ventilated stables favor its rapid spread from the fact that the micro-organisms are not carried out or diluted by currents of fresh air. The common practice of closing all doors, windows, cracks and other openings through which fresh air may enter a stable, as well as boarding up or otherwise closing the openings in front of the animals, thereby keeping the stable close and preventing an interchange of air is the surest way of insuring the spread of the disease in a herd when once it has made its appearance.

Such methods of treating cattle may result in the saving of a small amount of food supplied and a slight increase in milk yield, but it does so at the expense of a weakened constitution and a more susceptible condition of the body for the quick infection and development of disease.

Too frequent breeding, inand in breeding, forcing, a prolonged lactation, want of exercise, unwholesome food, impure

water, insufficient light, are accessory causes to this disease, and should be classed with heredity and improper ventilation.

They all predispose to infection and propagation of tuberculosis by lowering the natural resistant forces of the body, which tend to prevent the growth and action of the bacillus. And while all are important factors in relation to its production in a herd, they cannot possibly, though all be brought to bear at once upon the animal organism, produce the disease.

Tuberculosis cannot be produced in man or animal unless the *Bacillus tuberculosis* be present.

In the early stages of the disease in cattle the symptoms are not well marked and it is difficult, by an ordinary physical examination, to diagnose from other affections. The symptoms vary with the location and development of the tubercles. In some instances the disease runs an acute course and proves fatal in a few months. In others it tends to become chronic and runs a slow course, the animal showing no well-marked symptoms for a long time.

With a history of the existence of the trouble in a herd, a cough, slight at first, increasing in frequency and severity, together with general unthriftiness, a rough, staring, dry, lustreless coat, sunken eyes, etc., should excite suspicion and warrant isolation of the animal.

Chronic and intermittent bloating may be the prominent symptom and usually develops when the glands at the root of the lungs are diseased and enlarged.

Intestinal tuberculosis frequently produces diarrhœa alternating with constipation. With affection of the ovaries in the female constant heat or rut exists.

In tuberculous mammitis the udder, in whole or in part, becomes inflamed and enlarged, but is not particularly painful and rarely subsides with treatment. A peculiar kernel-like condition usually exists by which it is possible to diagnose the presence of tubercles. The flow of milk from the affected part is not lessened in the first stages of the trouble, but later it becomes scanty and poor in quality.

In some animals the progress of the disease appears to be arrested and they apparently recover, but usually it is uniformly downward toward a fatal ending. Sanitary surroundings exert a great influence in its progression or retardation.

It is incurable and nothing should be done in this connection, as a tuberculous animal is a source of danger to those about or to those using the milk. In unmistakable cases they should be slaughtered at once and the carcasses be disposed of by deep burial, by burning or by rendering.

JAS. B. PAIGE,
Veterinarian.

SERIES OF 1894. BULLETIN NO. 3.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF JULY, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

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Crop Report for the Month of July, 1894.

Office State Board of Agriculture,
Boston, Mass., Aug. 1, 1894.

Bulletin No. 3, Crop Report for the month of July, is herewith presented. Particular attention is called to the second and concluding part of the article on Tuberculosis and its Eradication, by the Veterinarian of this Board, which is printed at the end of this bulletin.

Progress of the Season.

Report No. 117 (July, 1893) of the Statistician of the United States Department of Agriculture states that the preliminary returns of the acreage of corn show 106 per cent, as compared with the acreage of 1893. This is an increase in round numbers of 4,000,000 acres. The increase is mainly in the States of largest production, Kansas having 110 per cent and Nebraska 118. The average condition of corn is 95, against 93.2 last July, being the highest condition since 1887.

The condition of winter wheat is 83.9 against 83.2 in June, and 77.7 in July, 1893. Spring wheat shows a condition of 68.4 against 88 in June, and 74.1 in July, a fall since the last report of nearly 20 points. The average condition of both spring and winter wheat, or all wheat, for the country is 79.3 per cent.

The condition of oats shows a decline from 87 in June to 77.7, against 88.8 at this date last year. In New Hampshire, Massachusetts and Maine the condition is satisfactory and most of the States bordering on the Great Lakes show a condition of 90 or above. In South Dakota the condition is 35 and in Kansas and Nebraska, 51. The crop was injured in many localities by spring frosts, and the injuries from

drought have been still more extensive, while in many cases there has been a combination of the two causes. There are also many complaints of rust, blight, and the depredations of insects.

The average condition of barley has declined about 6 points and on July 1, was 76.8 against 88.8 last year. California, the principal barley State, reports the low condition of 60 and Iowa a condition of 66, while in Wisconsin and Minnesota the crop is in very good condition. With the recent rains there has been a beginning of improvement.

The condition of winter rye on July 1 was 93.9, of spring rye, 81.7; and of all rye, 87. The condition June 1 was 93.2. On July 1, 1893, condition of rye was: winter, 83.8; spring, 89; all rye, 85.3.

The acreage of potatoes is returned as 105.1 of last year's acreage. Twenty-eight States report an increase in the area planted, and nine others an area equal to that of last year. Nebraska is the only State of large production showing a decrease in breadth planted. Among the chief causes of the increase in acreage is the extremely low price of cereals prevailing during the past twelve months. The average condition stands at 92.3, as against 94.8 and 90 in 1893 and 1892, respectively. Serious damage from drought is reported in numerous localities.

The area under tobacco is only 74.4 per cent of last year, and the average condition is 81 against 93 last year. The principal reasons for the reduction of area were scarcity of plants, unfavorable weather at planting time, and the low price of tobacco. Drought and injury from frosts are the principal causes of the reduced condition.

The average condition of rice declined 6 points between June 1 and July 1.

The average condition of apples for the whole country is down to 47.6 per cent, denoting a meagre crop. New England, New York, Michigan, Wisconsin, Iowa, Kansas, the Mountain and Pacific States show conditions pointing to a crop ranging from fair to good, but in most of these the fruit is dropping badly, and a further reduction of the percentages is looked for. A few other States follow these with the possibility of a half crop, while in the remainder the present condition is very low.

The peach crop holds to its condition of last month, but only a half crop is possible in New Jersey and but little more in Michigan. In California the crop is in fine condition and in Connecticut the condition is comparatively high. The average condition for the whole country is but 24.3 per cent.

The general average condition of clover is 80.2, as compared with 92.6 a year ago and 95.5 in 1892. The falling off of the past month amounted to 7.6 points. Drought and freezing are the chief causes of the low condition. Wet weather during harvesting and the ravages of insects have also affected the crop in some localities.

The general average condition of timothy is 77.3, as compared with 89.8 a year ago, 96.8 in 1892, and 87.4 in 1891. The principal causes of the falling off in condition have been drought and injuries from freezing weather.

The general average condition of pasturage is 83.2. Drought is the principal cause of the low general average and improvement as a result of recent rains is mentioned in a number of reports.

The returns for cotton make the average condition 89.6, against 88.3 in June, and 82.7 last year. There has been a slight general improvement in condition throughout the cotton belt.

The returns for July 1 give the average weight per fleece of this year's wool clip 5.33 pounds, as against 5.3 pounds last year, and 5.15 pounds for the census year. The variation by States is considerable, the range being from 2.5 pounds per fleece in Alabama to 7.5 pounds in South Dakota.

In Massachusetts the acreage of corn compared with last year is given as 100, and its average condition July 1 as 96; the average condition of spring rye as 100; the average condition of oats as 94; the average condition of barley as 94; the acreage of potatoes compared with last year as 106, and the average condition as 98; the acreage of beans compared with last year as 98, and the average condition as 98; the acreage of tobacco compared with last year as 88, and the average condition as 90; the average weight of wool per fleece as 4.9 pounds; the average condition of clover as 95; the average condition of timothy as 93; the average

condition of pasture as 92; the average condition of apples as 98; the average condition of peaches as 53; and the average condition of grapes as 96.

Temperature and Rainfall for the Whole Country.

From United States Weather-Crop Bulletins.

Week ending July 2. — Much warmer than usual throughout all the States of the central valleys and the Lake region, including the principal corn and wheat States, where the growth of all crops was in consequence rapid; also warmer throughout the Middle Atlantic States and New England. It was the warmest week of the season throughout the cotton region and in the States of the lower Missouri valley. Cooler than usual in all districts from the Rocky Mountains westward to the Pacific coast, but weather generally favorable and crops improved. Drought broken in the south Atlantic States and rains excessive in North Carolina, Florida and south-eastern Georgia; also a slight excess of rainfall in the lower Lake region, Michigan, Indiana and the east portions of the Dakotas, and western Minnesota. Very dry in the central and western portions of the cotton regions and thence north-westward over Indian Territory, Kansas and Colorado. As a whole the week was very favorable and the corn crop is in excellent condition though about ten days late.

Week ending July 9. — Week cooler than usual in all districts east of the Rocky Mountains, except southern Texas. Slightly cooler on the immediate Pacific coast, though warmer in the interior of the Pacific Coast States and over the plateau region. In the central valleys and the Lake region the average temperature ranged from 3° to 6° below the normal; weather favorable to all growing crops. Weather especially favorable for harvesting in the principal grain States. Temperature normal in the cotton region and the crop much improved except in South Carolina. The rainfall was greater than usual from the south Atlantic States westward to Texas and Indian Territory, and over Kansas and Colorado; also much greater than usual on the Carolina coast and in the lower Mississippi valley. The week was

unusually dry throughout the Northwest and the upper Mississippi valley. Showers were favorable in northern New England but drought continues in the southern portion. Corn crop still in good condition though the week has been dry.

Week ending July 16.—Week cooler than usual throughout the southern portion of the country, the maximum deficiency occurring in the Carolinas and Georgia, where it ranged from 6° to 9° per day. Nearly normal temperatures prevailed over New England, New York and in the Ohio and central Mississippi valleys. Decidedly warmer in Wisconsin, Minnesota and the Dakotas, and above average over Montana, the central plateau region and portions of Oregon and Washington. Except over limited areas in the southern States the week was very dry. Only very light showers have fallen in other regions and over the greater part practically no rain has fallen. The drought conditions have been intensified and all crops need rain throughout the central valleys, and middle and New England States. Corn is suffering seriously in Wisconsin and Iowa but is elsewhere in good condition. Cotton is generally in satisfactory condition. Tobacco is suffering from drought in Ohio and Kentucky.

Week ending July 23.—Week warmer than usual throughout the northern portions of the country from the interior of New England westward to Washington and California. Cooler than usual throughout the southern and central portions of the country from the Atlantic to the Pacific. Unusually high temperatures prevailed over the Dakotas and unusually low temperatures in the States of the central Mississippi and lower Missouri valleys. Over limited areas in the lower Lake region and Ohio valley, and generally throughout the southern States, more than the usual amount of rain fell. Generally throughout the northern States, except along the lower lakes and in portions of New England and the lower Ohio valley there has been less than the average amount of rain, and in considerable areas no appreciable amount has fallen. Severe drought prevails in Iowa, Minnesota and North Dakota, and though partially relieved still continues in portions of Nebraska, Wisconsin, Missouri, Tennessee, Ohio, Pennsylvania, Maryland and New Jersey.

It has been broken in New York, Virginia and to a great extent in New England, though in the last named section much permanent injury has been done. Cotton is generally in favorable condition. Corn is suffering seriously in Nebraska and Wisconsin, and is reported in a critical condition in Iowa. Elsewhere the outlook is favorable.

Week ending July 30. — Week warmer than usual from northern and central Rocky Mountain slopes eastward to the New England and middle Atlantic coasts. Week cooler than usual in the southern States, plateau regions and on the Pacific coast. More than the usual amount of rain fell over portions of the South Atlantic and east Gulf States, along the immediate west Gulf coast and over portions of Missouri and Illinois. Elsewhere with the exception of a few localities of limited extent, there has been less than the usual rainfall. The continued drought over the principal corn producing States of the central valleys and northwest has resulted in great damage to the corn crop. Reports as to cotton continue very favorable.

New England Weather and Crops.

(From United States Weather-Crop Bulletins.)

Week ending July 2. — Very warm except in extreme eastern Maine; frequent showers north, but no rain in many places in south and drought becoming very serious; corn and tobacco growing well; fruit dropping; oats rusting; rye very heavy.

Week ending July 9. — Frequent showers in northern portion, with temperature nearly normal; all crops growing fast; haying begun, with excellent crop in prospect; little or no rain in southern portion, and all crops, except corn and tobacco, damaged very much by drought; haying general and crop fair.

Week ending July 16. — Serious injury by drought continues in most southern districts; in some towns no rain of amount has fallen since May; much hay gathered in fine condition; showers and clouds in northern portion and everything growing.

Week ending July 23. — Drought generally broken, but the damage by the dry, hot weather to gardens, truck,

potatoes, small fruits, etc., in southeastern portion will amount to many thousand dollars; all crops in north doing well: hay crop very heavy in Maine.

Week ending July 30. — Very hot; much sunshine; heavy showers in east-central districts, with damage by lightning and wind; very little rain in southern portion and all crops greatly damaged by drought in Connecticut, Rhode Island and southeastern Massachusetts; crops elsewhere doing well.

Massachusetts Weather.

Meteorological Data for July, 1894.

[Furnished by the New England Weather Service.]

Station.	Temperature. Deg. F.					Precipitation.		Prevailing Wind.	Cloudiness. No. of Days.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Clear.
Monroe,	67.3	89	*	42	9	2.76	10	–	2	14	15
Pittsfield,	67.4	90	21, 30	42	17	3.48	11	–	–	–	–
Springfield,	75.9	97	†	52	9	2.52	8	S.W.	–	–	–
Amherst,	71.9	98	20	44	9	1.60	12	S.W	8	13	10
Fitchburg,	72.4	96	13, 20	49	8, 9	1.75	6	W.	4	11	16
Worcester,	72.6	94	20	52	9, 10	3.75	11	S.W.	4	14	13
Dudley	73.3	96	‡	49	9	1.61	4	W.	5	16	10
Framingh'm,	74.2	98	20	47	10	3.82	9	–	–	–	–
Lowell,	74.8	100	20	51	9	–	–	S.W.	4	25	2
Boston,	73.7	97	28	56	9	3.09	11	S.W.	8	12	11
Taunton,	72.8	96	20, 29	45	10	2.41	10	W.	2	14	15
New Bedf'd,	72.2	93	20	48	10	0.80	8	S.W.	1	16	14
Hyannis,	75.2	93	20	56	8, 9	0.62	4	S.W.	3	12	16
Provincet'n,	72.7	92	20, 29	57	23	0.46	4	S.W.	6	14	11
Nantucket,	68.7	85	31	58	18	0.29	3	W.	5	12	14

* Maximum on 20th, 28, 29th. † Maximum on 13th, 20th, 29th.
‡ Maximum on 13th, 20th, 28th.

Summary.

Temperature (F.).—Monthly mean, 72.3°; highest monthly mean, 75.9° at Springfield; lowest monthly mean, 67.3° at Monroe; maximum, 100° at Lowell on the 20th; minimum, 42° at Monroe on the 9th and at Pittsfield, on the 17th; range, 58°; greatest local monthly range, 54° at Amherst; least local monthly range, 27° at Nantucket; greatest daily

range, 38° at Pittsfield on the 20th and 21st; least daily range, 2° at Nantucket on the 22d. At Springfield the mean temperature was 2.3° per day above the normal; at Fitchburg it was 1.6° above; at Boston, 2.7° above and at Nantucket, 1° above.

Precipitation. — Average, 2.07 inches; greatest amount, 3.82 inches at Framingham; least, 0.29 inches at Nantucket. At Springfield the total precipitation was 1.95 inches less than the usual amount in July; at Fitchburg it was 2.20 inches less; at Boston, 0.50 inch less; and at Nantucket, 1.89 less.

Prevailing Wind. — South-west.

Thunder-storms. — 1st, 3d, 5th, 10th, 14th, 15th, 16th, 17th, 18th, 21st, 25th, 29th, 31st.

Hail. — 25th, Worcester; 29th, Fitchburg.

The weather for the month was on the whole favorable for harvesting hay and grain, but the heat on some of the last days of the month was intense and there was a general lack of precipitation in all eastern sections, giving one of the most serious and long continued droughts on record. At Boston the mean temperature up to the 24th was slightly below the average for 24 years, although the 1st to 4th, the 13th and 20th were very warm; but after the 24th the daily temperature averaged over 8° a day above the normal. At many of the interior towns reliable thermometers registered over 100° on the 20th; the voluntary observer at Chestnut Hill recorded 105.5° on that date with a well exposed thermometer. The mean of his maximum readings for the month was 89.3°. This is in great contrast to the temperature at Nantucket, where the maximum was only 85° and the mean of the maximum readings was 74.7°.

In the western part of the State the rainfall was generally sufficient for vegetation although it was getting a little too dry at the end of the month; but in eastern sections great damage has been done by the drought. In the northeastern counties this dry spell was broken on the 21st, three-fourths of an inch falling at Boston and 2.80 inches between that date and the end of the month. This was more than had fallen at this station between May 25 and July 20 inclusive. But in the southeast it is still dry and crops are being

injured. At Nantucket, as will be seen in the above table, the total for the month was only 0.29 inch, and when it is remembered that the total for June was only 0.81 inch and for May only 1.88 inches some idea of the dryness may be understood. There has been a deficiency of 9.31 inches at that station since Jan. 1, 1894.

As in June most of the thunderstorms were confined to the central and northern counties, as only one was experienced at Hyannis and only two at Provincetown during the month. Considerable damage was done by lightning on several dates and some fatalities are reported.

In the circular to correspondents returnable July 28 the following questions were asked : —

1. What insects are proving most troublesome in your locality?
2. What is the condition of Indian corn, and what proportion of the crop will be put into the silo?
3. What is the quantity and quality of the hay crop as compared with former years?
4. What forage crops are being raised to supplement the hay crop and eke out the pastures, and what is their condition?
5. What is the condition of market-garden crops, including potatoes, and how have those already harvested compared in yield and price with former years?
6. What is the prospect for apples, pears, peaches, grapes and cranberries?
7. What is the condition of pasturage in your vicinity?
8. How have rye, oats and barley compared with former years?

Returns were received from 108 correspondents, and from these the following summary was made : —

Insects.

The potato beetle and the horn fly are most frequently mentioned by correspondents as being prevalent and troublesome. It is thought that both these insects are more plenty and more destructive than usual. The horn fly appears to

be pretty generally scattered over the State for among those reporting its presence are correspondents in Richmond, Ashfield, Blandford, Pelham, North Brookfield, Sherborn, Topsfield and North Westport. Cattle owners troubled with this insect are referred for facts concerning its habits and ways to destroy it to Bulletin No. 24 of the Hatch Experiment Station, Amherst, Mass. Several correspondents report grasshoppers to be unusually plenty. Other insects reported as doing more or less damage are squash bugs and borers, white grubs, cabbage worms, rose bugs, onion maggots, cut worms, army worms, fall web worms, canker worms, boll worms, corn worms, and fire or cranberry worms. A number report no insects particularly prevalent or troublesome. The correspondent in Medway reports honey bees as destroying a large per cent of his raspberries.

Indian Corn.

During the past month Indian corn has suffered considerably owing to the dry weather, but the recent rains have greatly improved the stand and a good crop is now promised. Some of the correspondents refer to the outlook as excellent. It is thought that as a rule but a small portion of the crop will be put into silos. Some correspondents report no silos in their vicinity and others that three-fourths of the crop will be put into silos. It is believed that our successful dairy farmers are placing more and more dependence upon the silo.

The Hay Crop.

The returns of correspondents seem to indicate that the hay crop has been harvested in generally excellent condition, and that the quality as a rule is very good. Some speak of it as "splendid" and "never better." The yield was probably about three-fourths of an average owing largely to the dryness of the season.

Forage Crops.

Owing to the uncertainty of obtaining a proper supply of green food for dairy cattle by placing entire dependence in the pastures, it is becoming more and more the custom for our dairymen to plan to supplement the hay crop and to eke

out the pastures by the growing of forage crops. Among the crops grown fodder corn is no doubt the most universal. Hungarian grass, sweet corn, millet, oats, barley, barley and pease, oats and pease, cabbage, rye, and roots are also used, and either fed green, hayed, or put into the silo. These crops are quite generally looking well, though there is complaint of oats rusting. The correspondent in Franklin reports millet sprouted and then dried up. The correspondent in Fairhaven states that Hungarian grass is the favorite substitute for hay. The correspondent in Blackstone states that Indian corn is the main dependence, after that millet, barley and oats. The correspondent in Worcester states that corn, barley and millet are mostly grown for fodder, with barley the favorite.

Market-garden Crops.

These crops have been more or less injured by dry weather and are somewhat less than average in quantity, with prices low. The correspondent in Halifax writes, "yield poor, prices poorer." The correspondent in Arlington writes, "crops look well, prices low." The correspondent in Winchester writes, "The first good shower came on the 22d followed by rains on the 24th and 25th which thoroughly wet the ground, making a great opportunity for setting cauliflower, cabbage and celery plants. Everything promises well for the fall."

Early Potatoes.

On account of the dry weather the crop of early potatoes is very light, and some fields will not yield enough to pay for the labor of digging. The potatoes are quite small as a rule but are of good quality; prices low.

Fruits.

Apples and pears generally promise well, though the range of returns is from "scarce" to "abundant" and "splendid." Some complaint of apples dropping off. The prospect for grapes is fair to good. There will be but few peaches.

The crop of cranberries promises to be much lighter this year than usual.

Pasturage.

Pastures were greatly injured by the drought but have improved slightly since the late rains. Many correspondents refer to them as being "very short," "crisp," "dry" and as "badly burned."

Grain Crops.

The rye crop was on the whole a good average crop, and some correspondents refer to it as excellent and above average. Oats were more injured by the dry weather and there are a number of complaints of rust. Barley is an average crop.

NOTES OF CORRESPONDENTS.

(Returned to us July 28.)

BERKSHIRE COUNTY.

Sheffield (Dwight Andrews). — Potato bugs are doing the most damage. Indian corn is in fairly good condition; one-half will be put into the silo. The hay crop was less in quantity and of good quality. Fodder corn is raised to supplement the hay crop and is suffering from drought. Apples are falling off badly. Pears a fair crop. Pastures are all dried up; no rain in eight weeks. Rye is a good crop. Oats dry and rusting badly.

Monterey (Wm. S. Bidwell). — Potato bugs are doing the most damage. Indian corn is in fair condition and three-fourths of the crop will be put into the silo. Hay was a four-fifths crop of good quality. Fodder corn is the only forage crop raised and is in poor condition. Market garden crops are below former years in both yield and price. Apples and pears promise to be average crops. Pasturage is in poor condition. Rye was good but oats poor, being rusty and dried up.

Richmond (O. F. Smith). — Cabbage worms, the horn fly and grasshoppers are the most troublesome. Corn is a very good crop; a very small part will be put into the silo. Hay is below the average in quantity but of good quality. Fodder corn is raised to supplement the hay crop and is in good condition. Market garden crops are in good condition. Potatoes are a nice yield with prices good. Apples will be very poor; pears a little better. Peaches and grapes poor. Pasturage is fair. Rye, oats and barley full average crops.

Hinsdale (S. M. Raymond). — Potato bugs are doing the most damage. Hay was about a three-fourths crop of good quality. Corn is light and one-half will be put into the silo. Fodder corn is the principal crop raised to eke out the hay crop. Market garden crops are about average. All fruits will be light crops. Pasturage is in fair condition. Rye is fine and oats and barley are good.

Hancock (C. H. Wells). — Potato bugs have been unusually troublesome this month. Corn is coming forward rapidly and

promises well; only one silo in town. Hay a three-fourths crop of good quality. Fodder corn and Hungarian are being raised to supplement the hay crop; corn looks well and Hungarian poorly. Early potatoes of good quality but very small. Apples and pears will be a light crop. Pasturage in fully average condition. Rye an extra good crop. Oats and barley better than they promised but not so good as last year.

Cheshire (L. J. Northup). — The horn fly is the most troublesome insect. Indian corn is looking well. The hay crop was off in quantity but of good quality. Hungarian and fodder corn are raised to supplement the hay crop. Both early and late potatoes are small. Fruits are dropping off badly. Pastures are brown and dry. Rye, oats and barley compare favorably with former years.

FRANKLIN COUNTY.

Monroe (D. H. Sherman). — There are some grasshoppers and potato bugs are more numerous than usual. The hay crop was 15 per cent short but of very good quality. Fodder corn is raised to supplement the hay crop; condition good. Oats and barley will be hayed. Potatoes are a light yield of good size. Apples will be light. Pastures are very dry.

Buckland (J. D. Avery). — Horn flies and potato bugs are doing the most damage. Corn not in average condition; not over 15 per cent will be put in the silo. Hay about average in quantity; quality somewhat inferior because of showers and overripeness. Barley, Hungarian and corn are raised for forage; condition fair. Early potatoes a light crop; price lower. Apples a light crop in valleys, fair on the hills. Pastures are quite short.

Ashfield (Chas. Howes). — The horn fly is very troublesome. Corn is looking well; probably not more than one-fourth will be put into the silo. Hay is a good average crop of extra quality. Oats, barley and corn are raised to supplement the hay crop and are in very good condition. Potatoes will be a light crop; retail price $1 per bushel. Apples and pears will be a very good crop. Peaches and grapes light. Pasturage holding out fairly well. Rye, oats and barley are a very good yield.

Sunderland (J. M. J. Legate). — Corn is fully average; about one-fourth will be put into the silo. Hay was less than an average crop but the quality was splendid. Sweet corn and a few oats are raised to supplement the hay crop; condition good. Potatoes will be only a light crop. All fruits will be very light crops. Pasturage is very short. Rye was a good crop and oats are fair. All crops are below the average except corn.

Northfield (Chas. Pomeroy). — Potato bugs are doing the most damage. The growth of corn is much retarded by the drought; very little will be put in the silo. Hay was a three-fourths crop of good quality. Fodder corn is raised for forage and is looking fairly well. Dry weather reduced the yield of market garden crops. Early potatoes light; price high. Apples dropping badly; pears fair; no peaches. Pastures dry and growing short. Rye better than usual. Oats a three-fourths crop.

New Salem (Daniel Ballard). — Potato bugs are the most troublesome. Corn looks well; a very small part is put in the silo. Hay not quite average in quantity but above in quality. Fodder corn, some oats and a little millet are raised to supplement the hay crop, and look fairly well. Early potatoes a short crop; price about one dollar per bushel. Apples fair; other fruits few. Pasturage short and dry. Rye, oats and barley are an average yield though some oats are light and rusty.

HAMPSHIRE COUNTY.

Pelham (J. L. Brewer). — The horn fly and other flies annoy cattle. Corn is promising; no silos. Hay was a light crop of fair quality. Evergreen corn and oats are raised to supplement the hay crop; looking well. Pease yielded well; potatoes promise well. Apples promise half a crop. Pears good crop; no peaches. Grapes a three-fourths crop. Cranberries in blossom. Pasturage is poor. Rye and oats good crops.

Amherst (F. S. Cooley). — Corn slightly below average in condition; perhaps 50 per cent will be put in the silo. Hay nearly an average crop. Corn is raised to supplement the hay crop and some few fields of Japanese millet. Potatoes a light crop; not yet harvested. Fruit has suffered from frosts. Pastures are improved by recent rains. Rye, oats and barley, average crops.

North Hadley (H. C. Russell). — Potato bugs have been very numerous. Indian corn is in very good condition. Hay was a three-fourths crop of good quality. Fodder corn is being raised to supplement the hay crop and is doing well. Market garden crops are fair with prices below average. The prospect is poor for all fruit crops. Pasturage is below average. Grain crops are fair. Rowen will probably be poor. Early potatoes do not turn out well; price fifty-five to sixty-five cents per bushel.

Southampton (C. B. Lyman). — Corn in fair condition though dry weather curls the leaves somewhat; not much will go into the silo. Hay was about average in quantity and quality. Sweet

corn and Hungarian raised for forage; condition fair. Market garden crops have suffered from drought; prices low. Apples fair; pears, peaches and grapes light. Pasturage is very dry. Rye an extra crop; oats light.

Chesterfield (Horatio Bisbee). — Potato bugs are doing the most damage. Corn is fairly good; little will be put into the silo. Hay a small crop of very good quality. Fodder corn, Hungarian and barley with some hayed oats are raised to eke out the hay crop. Poor prospect for all kinds of fruit. Pastures are rather short on account of dry weather.

Goshen (Alvan Barrus). — Corn looks fairly well; but little will be put in the silo. The hay crop was 15 per cent short in quantity but of first-class quality. Barley, oats and some corn will be fed green. Dry weather is cutting short the potato crop. Apples are very uneven and all other fruits uncertain. Pastures are suffering from dry weather. Rye, oats and barley suffered from drought.

HAMPDEN COUNTY.

Blandford (E. W. Boise). — The horn fly is very troublesome. Corn in good condition; two or three new silos built this season. Hay a full average crop of extra quality. Oats and pease, and barley are raised to supplement the hay crop, but are below average on account of rust. Potatoes are much below average. Apples and pears are good; cranberries injured by May frosts. Pasturage short. Rye heavy; oats and barley below average.

West Springfield (T. A. Rogers). — The horn fly is the most troublesome. Corn is looking well; perhaps five per cent will go into the silo. Hay was about an average crop of A No. 1 quality. Oats and fodder corn are early forage crops; later ones are barley and pease, turnips and cabbage. Market garden crops are looking well; potatoes above average; price rather under. Apples average; pears light; peaches very few; grapes good. Pasturage very short but improving. Rye a very good crop; oats are nearly all hayed.

West Springfield (J. N. Bagg). — A twenty-five mile drive westward on the 27th inst. showed corn and tobacco very promising. More oxen worked than I have seen for years; mowing with cattle seemed a novelty. Orchards are heavy with apples and gardens green. The farmers are hoeing generally. Did not see any playing ball or practising with bicycles. They get gymnastic exercises in another way. If they take a vacation will be satisfied with an arm chair in the shade for a few hours. The country is safe so long as the farmers stick to their homes and work.

Holyoke (J. C. Thorpe). — Corn is good on heavy land, light on light land; a small proportion used for ensilage. Hay an average crop of good quality. Hungarian and barley are being sown to help the pastures. Apples and pears are plenty; peaches and grapes about average. Pasturage is quite short from dry weather. Rye, oats and barley about average crops.

Chicopee (R. W. Bemis). — Corn is looking well. Hay was not more than three-quarters of an average crop. Market garden crops already harvested compare favorably in yield and price with former years. Pears and apples a short crop; grapes a fair crop. Pasturage short and dried up. Rye a good crop; oats not so good.

Wilbraham (F. E. Clark). — The horn fly is the most troublesome. Corn is looking very well; perhaps one-fifth will go into the silo. The hay crop is perhaps three-fourths of an average; quality fine. Corn, Hungarian, barley, millet and oats are raised to supplement the hay crop, and all are looking well except oats which are rusting badly. Early potatoes not half a crop; late ones need rain. Apples and pears three-fourths crops; peaches and grapes one-fourth. Pastures are dried up and soiling has been resorted to. Rye and barley full average crops; oats have suffered.

Monson (A. H. White). — Corn is growing very fast; few silos in town. Hay was a three-fourths crop of good quality. Corn fodder, and pease and oats are raised to supplement the hay crop, and are very fair. Market garden crops are badly dried up, and early potatoes are almost a failure. Apples are dropping badly; pears are scarce; no peaches, and very few cranberries. No feed in pastures. Rye an average crop; oats and barley shorter straw than usual but filling out well.

WORCESTER COUNTY.

Southbridge (G. L. Clemence). — Corn suffers for want of rain; about 20 per cent will be used for ensilage. Hay is about one-third off in quantity; quality good. Oats and pease are raised to supplement the hay crop, but only about half a crop will be harvested for lack of rain. Early potatoes almost a total failure. Apples and pears good. Pastures are all burned up. Rye and barley good; oats rusted and a small crop.

Spencer (H. H. Kingsbury). — Potato bugs and grasshoppers are doing the most damage. Indian corn in fair condition; needs rain; not over ten per cent will be silaged. Hay a three-fourths crop of good quality. Fodder corn is raised to supplement the hay crop; condition fair. Market garden crops fair; yield good; price a little off. Apples good; pears small; no peaches and few cranberries. Pasturage is very short. All rye, oats and barley put in early have yielded well.

Oakham (Jesse Allen). — Corn is in fair condition; very little will be put into the silo. Hay was not more than a three-fourths crop of first-rate quality. Fodder corn and barley are being raised to supplement the hay crop. Recent showers have greatly improved potatoes which look well; price about $1 per bushel. Prospect good for apples and grapes; other fruit scarce. Pastures are greatly injured by dry weather. Rye, oats and barley are fair crops.

Petersham (S. B. Cook). — The potato bug is the only troublesome insect. Corn is in good condition; no silos in town. Hay is a three-fourths crop of extra good quality. Corn, oats, rye, barley and various roots are raised to supplement the hay crop. Market garden crops much reduced by drought; potatoes a light yield; price a little higher. Apples and pears good; grapes good; peaches few. Pastures badly dried up and feed short. Rye more than average; oats and barley a good average.

Westminster (Joseph Hager). — Potato bugs are very plenty. Corn is rather late because of dry weather; a small proportion will be put in the silo. Hay was a light crop of good quality. Corn is the principal forage crop; some barley and oats raised. Drought has injured market garden crops very much. Apples and pears have fallen off more than usual but those left look unusually well; peaches and cranberries scarce. Pasturage is very short. Rye, oats and barley about average.

Fitchburg (Dr. Jabez Fisher). — Corn is in very good condition. Hay was very nearly a full crop of first quality. Potatoes were considerably injured by drought. Apples promise very well; pears only fair; grapes a small crop but looking well. Recent rains have much improved the condition of the pastures.

Holden (G. S. Graham). — Flies are particularly troublesome. Corn is in good condition; only a small part will be put in the silo. Hay is short in quantity but of good quality. Fodder corn, barley and millet are being planted to help out the hay crop. Apples and pears are splendid, and grapes good. Pasturage is very short and cows must be fed in the barn. Rye, oats and barley are about average and all were cut for feed.

Worcester (H. R. Kinney). — Grasshoppers are now very numerous. Corn looks well, and a large part of the crop will be used for ensilage. Hay was of good quality but the crop was light. Barley, corn and millet are raised to supplement the hay crop. Potatoes promise a very light crop; most other market garden crops have been fair. Apples promise a full crop; the other fruits promise light. Pasturage has been dry but is now improving. Rye is about an average crop; oats and barley mostly cut green. Oats rusted badly and were only a light crop.

Upton (B. A. Jourdan). — Potato bugs are doing the most damage. Some fields of corn look fine but many on light lands are ruined by drought. Hay is a three-fourths crop of good quality. Barley is raised to supplement the hay crop. Market garden crops, including potatoes, were much affected by the drought. Apples are very good on high land. Pastures are very dry. Rye, oats and barley were average crops.

Douglas (T. M. Potter). — The potato bug is the most troublesome insect. Corn is good considering the dry weather; a very small part will be put in the silo. Hay was not more than a three-fourths crop. Hungarian grass is being raised to supplement the hay crop. Potatoes are very small. The prospect for all kinds of fruit is fair. Pastures are short and dry. Rye a good crop and up to other years; oats fair.

MIDDLESEX COUNTY.

Groton (Daniel Needham). — The potato bug and squash maggot are the most troublesome. Corn is injured by drought. The hay crop was fully as large as usual and of good quality. Corn fodder is largely raised to supplement the hay crop. Market garden crops are in poor condition. Potatoes on high land are a total failure. The prospect for apples is now good though many more than usual have fallen. Pastures are getting very dry. Rye, oats and barley about average crops. No such dry season, commencing so early and continuing so late, is on my record.

Billerica (J. N. Pardee). — Sweet corn is doing finely; no silos here. Hay crop average in quantity and of very good quality. Large amounts of Hungarian have been sown but drought has prevented growth; barley is now being sown. Market garden crops are very light yields; prices about average. Apples good. Pears about half a crop. Peaches a failure; grapes good. Pastures are dried up. Early sown oats good. Rye ripened prematurely and is shrunken.

Wilmington (C. W. Swain). — Corn is in good condition; probably none will be put into the silo. Hay was about an average crop; harvested in good condition. No forage crops raised to any extent. No market garden crops harvested yet; quality excellent. Apples good; pears poor crop. Cranberries hardly fair. Pasturage is in poor condition. Rye, oats and barley are not much raised but are good crops.

Concord (Wm. H. Hunt). — Corn on light soil has suffered from drought; elsewhere is looking finely. Hay was a full average crop of fine quality. Corn-fodder, barley, millet and turnips are the principal forage crops. Potatoes have suffered

from drought on light soil. Apples will be fair; pears medium. Peaches very few; grapes fair. Pastures have suffered very much from drought.

Weston (H. L. Brown). — Hay was less than an average crop but of good quality and harvested in first-class order. Barley is the principal forage crop, being put in for late fall feed. All market garden crops have suffered from drought; potatoes more than any other; some vines are dried up and no potatoes are in the hill. Apples are looking well. Pears good; no peaches; some grapes. Cranberries just blossoming. Pastures are very short and dry.

Sherborn (N. B. Douglas). — The horn fly and the common horse fly are very troublesome. Corn was a poor stand and much of it injured by drought. Hay was a four-fifths crop of extra quality. Oats, barley, Hungarian and corn are raised for forage; oats light; early pieces of Hungarian good. The potato crop will be light. Apples will be 70 per cent of a full crop; pears 60 per cent; peaches 5 per cent; grapes 80 per cent; cranberries 40 per cent. Pastures are very short from drought.

Hopkinton (W. V. Thompson). — Corn damaged by hailstorm of July 25 but elsewhere generally good; three-fourths will go into the silo. Hay about average in quantity and quality. Hungarian and corn are being raised to supplement the hay crop. Market garden crops not quite average. Early apples, full crop; winter light; pears light; grapes fair. No pasturage to speak of. A very heavy hailstorm on the 25th ruined crops on a strip one-half mile long by fifty rods wide. Hailstones from one-half inch to one inch in diameter fell and lay in piles for an hour after the storm.

ESSEX COUNTY.

Haverhill (Eben Webster). — Corn has suffered from drought but the rains will help it; no silos. Hay a little less than average but of good quality. Corn with some barley and oats are raised for forage; condition fair. Market garden crops low; potatoes about half a crop on dry land; prices low. Prospect good for apples, light for pears and grapes. Pasturage is dry. Rye, oats and barley about average.

Groveland (Abel Stickney). — Potato bugs, squash borer and grubs are doing the most damage. Corn is late but pushing fast; about one-tenth will go into the silo. The hay crop compares favorably with former years in quantity and quality. Corn, barley, Hungarian, and oats and pease are raised to supplement the hay crop. Market garden crops look well, those marketed were below

average in yield and price. Apples good, pears good, peaches light. Pastures are now short. Early sown grain crops were good, later ones not so good.

Ipswich (O. C. Smith). — Squash bugs are doing the most damage. Corn is in fair condition; 10 per cent will be put in the silo. Hay was a two-thirds crop of good quality and well cured. Fodder corn, oats and barley are raised for forage; crops generally about half of average. Most garden crops are growing finely except potatoes; yield and price about average. Apples and pears promise well, peaches small, grapes fair, cranberries fair. Pasturage is good where not overstocked. Oats and barley about half crops and rye but little better.

Topsfield (B. P. Pike). — Horn flies are thicker than ever. Corn was injured by drought but is looking well; about 10 per cent will be put in the silo. Hay was about 80 per cent of a full crop; quality excellent. Corn, Hungarian and barley are used for forage; late sown Hungarian on dry land failed to come up. Early potatoes are not a full crop. Apples and pears will be average; no cranberries. Pastures are about as bad as they can be. Early potatoes almost a failure; price below the average. No market garden crops were up to the average.

Marblehead (Wm. S. Phillips, Jr.). — Corn in fair condition; 90 per cent will go into the silo. The hay crop was apparently fully up to the average. Corn, millet, oats and pease, and mangolds are raised to supplement the hay crop; condition good. Market garden crops a little under average; early potatoes poor. Very little fruit. Pasturage very poor. Rye, oats and barley about average.

NORFOLK COUNTY.

Cohasset (E. E. Ellms). — Corn is looking well. Hay about a three-fourths crop of very fine quality. Corn, rye and barley are being raised to supplement the hay crop. Market garden crops are in good condition, the yield being up to the standard. The prospect for apples, pears, peaches and grapes is very fine. Pastures are very dry. Rye, oats and barley are good crops.

Franklin (C. M. Allen). — Corn is growing fast, but backward; not over 25 per cent will be put in the silo. Hay was a three-fourths crop. Fodder corn and millet are raised to supplement the hay crop; much millet sprouted and then dried up. Market garden crops 50 per cent yield, but price well sustained. Apples good; pears good; peaches one-fourth crop; grapes a half crop; cranberries a one-fourth crop. Pasturage is all dried up. Rye was a full crop; oats a three-fourths crop; and barley nearly a full crop.

Medway (Monroe Morse). — Potato bugs are doing the most damage; honey bees do much injury to raspberries. Hay about 80 per cent of a full crop, and the quality good. Corn about 20 per cent off in condition. Fodder corn, millet and barley are being raised to supplement the hay crop. Market garden crops are very poor indeed. Apples good; pears fair; peaches one-fifth crop; grapes good. Pastures are badly burned. Rye was good; oats and barley grown only for fodder.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — Corn is in good condition; no silos. Hay was an average crop of extra quality. Corn, Hungarian and barley are raised to supplement the hay crop; condition good. Potatoes on high dry land are small; on moist land fair. Apples, pears and grapes promise a fair crop; peaches and cranberries a very small crop. Pastures are short. Rye, oats and barley are average crops.

Raynham (N. W. Shaw). — All insects are numerous. Corn is not up to former years; none will be used for ensilage. Hay about an average crop; quality above average. Fodder corn is the principal forage crop; condition good. Market garden crops are poor and prices low. Apples promise a good crop; pears poor; peaches bad; grapes fair. Pastures are very much dried up. Rye, oats and barley not equal to former years.

Taunton (C. H. Wilmarth). — Rose bugs, canker worms and the army worm are doing the most damage. Hay was a light crop because of drought. Market garden crops were about average. Pasturage is poor because of drought. Rye, oats and barley are about average crops.

Somerset (Joseph Gibbs). — The web worm and white grub are the most troublesome. Corn would be good with rain; no silos here. Hay was a three-fourths crop of good quality. Barley and fodder corn are raised to supplement the hay crop and both need rain. Market garden crops are not more than three-fourths of an average. Apples and pears medium; peaches poor; grapes good. Pastures are ruined by the drought. Rye, oats and barley are good where not destroyed by the army worm.

Westport (A. S. Sherman). — The horn fly is tormenting the cattle very much. Corn is very good; none put into the silo. Hay was a small crop of poor quality. Much corn is planted for fodder and used both green and dry. Apples scarce; pears plenty; peaches none; grapes plenty; cranberries scarce. There is very little feed in the pastures. Rye and barley are full average crops while oats are not up.

Fairhaven (F. C. Lyon). — Indian corn in good condition; color good; no silos. Hay crop about as last year; quality very good. Hungarian is the favorite substitute for hay; condition very good. Half the potatoes planted will amount to nothing, while early planted ones will be a two-thirds crop. Prospect for apples good. Pastures are nearly all dried up. Rye has been a splendid crop.

PLYMOUTH COUNTY.

Brockton (Davis Copeland). — Corn in good condition; most of it will be used for ensilage. Hay was a little below the average. Fodder corn is in good condition and barley will be sown soon. Market garden crops are average, with the prices low. Early potatoes are a light crop. The prospect for apples, pears, grapes and cranberries is fair. Pasturage is very short.

Hingham (Aaron Low). — Very little Indian corn grown. Hay was not more than three-fourths of a crop. Fodder corn and Hungarian are being raised to supplement the hay crop, and are in good condition. Market garden crops are very poor, being badly injured by drought. Apples are good; cranberries hurt badly by frost. Pasturage is very short and badly dried up. Rye is a very good crop.

Marshfield (J. H. Bourne). — Potato bugs and onion maggots are the most troublesome. Corn is in excellent condition; one-fourth will be put in the silo. Hay was a three-fourths crop secured in fine condition. Fodder corn, oats and Hungarian are raised to supplement the hay crop; fodder corn looks well, but the others are light. Market garden crops are in very poor condition, and early potatoes bring only three-fourths of last year's price. Apples and pears are abundant; peaches below average; grapes and cranberries less than half a crop. Pastures are unusually poor. Rye excellent; oats a two-thirds crop.

Halifax (G. W. Hayward). — Corn is in fair condition; no silos. The hay crop was about average in quantity and quality. Fodder corn is the main crop for summer feed, but some barley and millet is sown. The yield of market garden crops is poor and prices poorer. There are some apples and cranberries, but no peaches, pears or grapes. Pasturage is all dried up. Rye good; oats raised for fodder fair; barley raised only for fodder light.

Kingston (J. H. Cushman). — Potato bugs are most troublesome. Indian corn is very backward; not one-tenth will be put into the silo. Hay was about an average crop of fine quality. Corn is used for forage; condition rather poor. Market garden

crops are good considering the drought; prices very low. Apples and cranberries are doing very well. Pastures are crisp and dry. Rye, oats and barley are a little above the average.

Wareham (A. B. Savary). — The potato bug is the only insect proving troublesome. Corn is in poor condition because of the drought. Hay was less than an average crop, but the quality was good. Forage crops are poor because of continued dry weather. Potatoes and other garden crops are poor. The prospect for fruit is poor should the weather continue hot and dry. Pasturage is very poor, being badly dried. Rye, oats and barley were small crops.

BARNSTABLE COUNTY.

Falmouth (D. R. Wicks). — The fall web worm and the boll worm are doing the most damage. Corn is doing well and about four-fifths of it will be put in the silo or fed green. Hay was about a three-fourths crop of good quality. Corn is the principal forage crop. Market garden crops are good; early potatoes badly blighted. Apples promise fairly; pears, peaches, grapes and cranberries poorly. Pasturage is very short. Rye, oats and barley about average crops.

Sandwich (J. R. Holway). — Fire worms are doing the most damage. Indian corn was very good until the past two weeks when drought has checked it. The hay crop was below the average but of good quality. Fodder corn is raised as a forage crop but is drying up. Potatoes are nearly a failure. Fruit is good with the exception of cranberries of which there will be very few. Pasturage is all burnt up. Rye a fair crop. Oats blighted and were small.

Barnstable (John Bursley). — Wire worms, corn worms and fire worms are doing the most damage. Corn is suffering for rain; not over five per cent will be used for ensilage. Hay was a three-fourths crop of good quality. No forage crops are being raised as nothing can be sown because of drought. Market garden crops not over 25 per cent of average; prices good. Cranberries not over a one-third crop and all fruit light. Pastures are burned and parched. Rye, oats and barley are average crops. No rain since May 31.

Dennis (Joshua Crowell). — Indian corn is below average in condition. Hay is not more than a three-fourths crop; quality good. Some fodder corn is raised to supplement the hay crop, but it is too dry for any forage crop. Potatoes are much below the average in yield. Apples and pears fair; cranberries perhaps one-third of a crop.

Brewster (John H. Clark). — Corn in very good condition but beginning to suffer from drought; little in silo. Hay a two-thirds crop of fair quality. Forage crops little raised. Market garden crops very poor owing to severe drought. Apples, pears and grapes look fairly well; cranberry crop very light. Pasturage all dried up. Rye, oats and barley were very light crops.

DUKES COUNTY.

West Tisbury (Wm. J. Rotch). — Indian corn is suffering severely from drought; none goes into the silo. Hay was a two-thirds crop of good quality. Very little is done towards raising forage crops to supplement the hay crop. Market garden crops are suffering from the continued dry weather. The cranberry crop will be light; other fruits will do better. Pasturage is in poor condition. Rye, oats and barley were nearly average crops.

NANTUCKET COUNTY.

Nantucket (C. W. Gardner). — The potato bug and striped beetle are most troublesome. Indian corn is in very poor condition. Hay was about half a crop but of splendid quality. Corn is raised to supplement the hay crop and is looking fair. Market garden crops are very poor; potatoes a failure as a general thing. No cranberries. Pastures are very poor, all dried up. There has been no rain for fifty days. Oats are very rusty and rye did not head well.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

VETERINARY.

The Diagnosis and Eradication of Tuberculosis.

PART II.*

The question is often asked the veterinarian by practical stockmen, "How can I tell when my cattle have tuberculosis?" I answer that it may be detected in most well-marked cases by the physical symptoms, — the general condition of the animals, with the knowledge of the previous existence of the disease in the herd.

But in eradicating this disease from a herd it is necessary that we remove all affected animals, no matter how slightly diseased, for if one is left it soon becomes a centre of infection and others coming in contact or being kept in the same stable soon become the subjects of the affection. The disease is so insidious in its attack and the general disturbance so slight in its incipiency that it becomes an impossibility by an ordinary examination to make a correct diagnosis.

These uncertain and occult cases are the ones which prove so troublesome to the stockman and veterinarian. Possibly by one of three methods may a correct diagnosis be made.

First. By microscopical search for the germ. In some instances these are found in the mucous material from the nostrils, the milk or perhaps in the contents of abscesses.

Second. By the inoculation of susceptible animals, such as rabbits or guinea-pigs, with some substance which may contain the micro-organism.

Third. By the use of tuberculin.

The first two methods are not as easy of application or as reliable as the third. All are suitable only for the veterinarian. The use of tuberculin as a diagnostic agent in tuberculosis is comparatively of recent origin. Although it has been experimented with for several years its value has been but recently proved.

Tuberculin or Koch's lymph is a substance which was prepared by the German bacteriologist Koch for the cure of consumption in

* For Part I see Bulletin No. 2.

persons. It consists of a sterilized alcoholic or glycerine extract of the material upon which the *bacillus tuberculosis* has been grown. What the active principle of the lymph is has not been determined, but is supposed to be a complex chemical compound generated by the growing germs.

While it was found not to cure consumption when injected in small quantities into the circulation, its injection into the body of a consumptive person was followed by the appearance of febrile symptoms: rise of temperature, increased action of the heart, slight headache, chills, etc. These phenomena did not appear when the lymph was injected under the skin of one not suffering from the disease.

This forms the basis for the employment of the lymph in the diagnosis of tuberculosis in domestic animals. As a result of numerous and careful experiments it has been found very reliable, in fact, almost infallible. The condition of the internal temperature, for twenty-four or more hours after its injection, as determined by the use of a thermometer, shows the existence or non-existence of tuberculosis.

A rise of the internal temperature several degrees above the normal within twenty-four hours after the injection would, in the absence of other conditions which might cause the same change, indicate the existence of tuberculosis. A stationary or normal temperature indicates the non-existence of the disease.

For the reason that disease or other conditions may alter or raise the temperature at any time, it is necessary that tuberculin be used by one well acquainted with ordinary diseases and their symptoms, so as to be able to determine whether the elevation following the injection of tuberculin comes as the result of the use of the lymph or is an accompaniment to some developing disease.

In all cases of "reaction" it becomes necessary to prove that the rise of temperature has not been caused by some inflammatory trouble independent of tuberculosis before we can say that the "reaction" indicates the existence of tuberculosis.

Properly used by a competent veterinarian tuberculin is practically infallible in the diagnosis of tuberculosis. By its use alone can we with any degree of accuracy be reasonably sure of our opinion as to whether tuberculosis does or does not exist in an animal; and so extremely delicate is the test that its use is followed by a marked reaction though there be but one or two tubercles present in the body.

We frequently hear this question: "If I test my cows with tuberculin may I not introduce the disease into the herd or produce the disease in the healthy animals?" We answer, No. Tuber-

culin properly prepared does not contain a single living germ. No living matter is introduced when the lymph is injected under the skin, only a solution which contains a substance produced by the growth of the *bacillus tuberculosis* when cultivated outside of the body. The active principle coming in contact with the tuberculous tissue sets up an inflammation which produces the febrile disturbance.

The delicacy of the tuberculin test and the difficulty of detecting tuberculosis in cattle by physical examination was well illustrated in a recent experiment conducted by the writer.

Thirty-two cows, all in good condition and apparently healthy, were taken for the experiment; not one showed a well-marked symptom of the disease. They were treated by injecting a given quantity of prepared tuberculin under the skin by the use of a hypodermic syringe. As a result twenty-five gave a "reaction," and at the conclusion of the test all were slaughtered and a careful examination of the carcasses made. Of the thirty-two tested only seven proved to be free, while twenty-five were found diseased.

Of the twenty-five diseased, twenty-four had very few nodules present, and while in most instances they were in or about the lungs, some were found in the liver or other abdominal organs. In one alone was there found any great number and in this animal they were so situated and were in such a condition that the general health of the cow did not suffer.

Where tuberculin has been used in herds in which the disease has been known to exist, a similar condition of affairs has usually been found.

From what we know of tuberculin as a diagnostic agent it is safe to say that it will find its widest application as a medium by which we may extirpate tuberculosis from our herds; but not by its employment alone in the detection of obscure cases of the disease, but by its employment in connection with thorough renovation and disinfection of our stables.

To detect and remove the affected animals from a herd by the use of tuberculin and still allow the healthy to remain in an infected stable under conditions where they are sure to contract the disease, would amount to nothing more than to suppress the trouble for a time.

For this reason principally it would appear that tuberculin is suitable only for the use of individual farmers who are so situated that they can employ it in connection with other measures which are absolutely essential to insure success in the matter of eradication and suppression of the disease.

JAS. B. PAIGE,
Veterinarian.

SERIES OF 1894. BULLETIN NO. 4.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF AUGUST, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

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1894.

Crop Report for the Month of August, 1894.

Office State Board of Agriculture,
Boston, Mass., Sept. 1, 1894.

Bulletin No. 4, Crop Report for the month of August, is herewith presented. Particular attention is called to the Report on Fruits by the Pomologist of the Board, and to the article on Statistics of Massachusetts Agriculture.

Progress of the Season.

Report No. 118 (August, 1894) of the Statistician of the United States Department of Agriculture states that corn has declined nearly 26 points since July 1, the average for the entire breadth being 69.1 against 95 for the month of July. The condition August, 1893, was 87. The great decline is due almost wholly to the extensive and unprecedentedly severe drought that set in since the last report, and to the hot, dry winds that swept over the States of Nebraska, Kansas, Iowa and parts of other Western States. In some localities the crop has been injured beyond recovery, while in others timely rains would go far toward assuring fair yields.

The condition of spring wheat has fallen since last report 1.3 points, being 67.1 against 68.4 for the month of July. The advices as to winter wheat, from correspondents and thrashers, indicate a good yield of excellent quality.

The average condition of spring rye is 79.8 against 81.7 last month and 78.5 last year.

The condition of oats has changed very little since last month, the condition being 76.5 against 77.7 in July. The oat crop has generally been harvested. Yield and quality generally good, though injured in some sections by drought, insects, rust or smut.

The average condition of barley is 69.8 against 76.8, being a decline of 7 points since last month, as a result of the continued drought.

The acreage of buckwheat is reported at 96.8 as compared with last year. The condition is 82.3 as against 88.8 last year. There has been an increase of acreage in the Eastern States, while in the States of the Mississippi and Ohio valleys there has been a decrease.

The hay area shows a reduction of 7.6 per cent as compared with that of last year, and the average condition, which is 24.6 per cent below normal, indicates a comparatively low rate of yield. The hay harvested seems, however, to be generally of good quality, while much of it is excellent.

The returns for clover indicate less than three-fourths of a normal yield, the general average being only 71.2. Drought and heat have been the chief causes of the shortage, although winter-killing, spring frosts and the ravages of insects have contributed to the result. The quality is far more satisfactory, the general average being 90.2.

Severe and widespread drought has further reduced the condition of pastures, and the general average of condition is only 66 as compared with 83.2 a month ago.

The returns for August make the condition of potatoes 74 per cent, which is the lowest condition ever reported by this office. The decline from July condition is 18.3 per cent.

The average condition of tobacco on August 1 was 74.9 against 81 July 1.

A further decline of nearly 4 points in the average condition of apples is shown, the percentage standing at 44 against 47 last month. The drop has been severe and aggravated by drought in many sections. The condition of peaches now stands at the extremely low figure, 22.3. The loss has been general in States that had the best prospects as well as in those having outlook for lighter yields. The condition of grapes is lower than the August condition for any year since 1890.

The condition of cotton is good, the average for August being 91.8 against 80.4 in August 1893; 82.3 in 1892 and 88.9 in 1891.

In Massachusetts the average condition of corn August 1 is given as 97; the average condition of spring rye as 78; the average condition of oats as 77; the average condition of barley as 89; the acreage of buckwheat compared with last year as 100, and its average condition as 90; the average condition of potatoes as 82; the average condition of tobacco as 96; the acreage of hay compared with last year as 101; the average condition of timothy as 93; the product of clover compared with a full crop as 89; the average quality of clover hay as 100; the average condition of pasture as 86; the average condition of apples as 87; the average condition of peaches as 33; and the average condition of grapes as 95.

Temperature and Rainfall for the Whole Country.

From United States Weather-Crop Bulletins.

Week ending August 6. — Week slightly warmer than usual on the Atlantic coast from southern New England to Maryland, also in western Montana and over the interior portions of central and northern California. Elsewhere temperature generally below normal, the week being decidedly cool throughout the southern portion of the country from the Atlantic to the Pacific. Light frost in Minnesota, Wisconsin and Michigan on the 3d and 4th. Week one of excessive rainfall over the greater portion of the Southern States. Showers over Middle Atlantic and New England States. More than usual rainfall in northern Michigan and over limited areas in the central Ohio and central Mississippi valleys, but over much the greater portion of the country from the Alleghanies westward, little or no rain fell during the week. The cranberry crop, which had previously sustained injury from forest fires in New Jersey and Wisconsin has been further damaged in the last-named State by recent frosts.

Week ending August 13. — Week cooler than usual on the Pacific coast, plateau regions, west Gulf States, and on the Atlantic coast from Virginia northward. Week warmer than usual from the upper Missouri valley and Middle Rocky Mountain slope eastward to the south Atlantic coast including the central valleys and Lake region. Less than

usual amount of rain over the greater portion of the country. In some sections exceptionally heavy rains fell, while over other large areas there was no appreciable rainfall.

Week ending August 20. — Nearly normal temperature conditions in lower Lake region, southern New England, and in the Middle Atlantic and Gulf States. In upper Lake region and on the south Pacific coast week cooler than usual. Week warmer than usual from north Pacific coast eastward to the upper Mississippi valley and in the lower Ohio valley and South Atlantic States. As in the past few weeks the rainfall was very much scattered. The greatest amount fell in the South Atlantic and Gulf States. Over a large section of the country no appreciable amount fell.

Week ending August 27. — Week warmer than usual on the Pacific coast, and in all northern districts east of the Rocky Mountains, excepting portions of New England and the Middle Atlantic States, where nearly normal conditions prevailed. No marked excess in temperature occurred east of the Lake region, but to the westward, and on the Pacific coast, the week was decidedly warmer than usual. Week generally cooler than usual throughout the Southern States. The rainfall for the week was very heavy over the greater portion of the Gulf States, excepting along the immediate coast. Throughout the Lake region, and from the upper Missouri valley westward to the Pacific coast, no appreciable rainfall occurred during the week. Forest fires are reported from Wisconsin, Michigan and Montana, and they have caused much damage.

New England Weather and Crops.

From United States Weather-Crop Bulletins.

Week ending August 6. — Copious rains unevenly distributed; crops improving in south, excellent in north; haying mostly completed; all English hay fair crop in south, heavy in north; meadows good everywhere; all hay extra quality and secured in splendid condition.

Week ending August 13. — Cool and cloudy with insufficient moisture; slight frost on 11th, but no damage reported. Grain fair crop; corn doing well; tobacco cutting begun;

early fields, fair crop. Onions almost a failure; early apples quite plentiful.

Week ending August 20. — Weather favorable, except too little rain in many central and southern sections; low temperature favorable to potatoes in preventing rust and decay; potato crop very light in south; cranberries very light crop and injured by fruit worms.

Week ending August 27. — General frost on the 22d, doing slight damage in lowlands; killing frost on the 27th in valleys in central New Hampshire and Vermont; drought slightly relieved in the south, but continues serious elsewhere; apples, pears and grapes promise well.

Massachusetts Weather.

Meteorological Data for August, 1894.

[Furnished by the New England Weather Service.]

Station.	Temperature. Deg. F.					Precipitation.		Prevailing Wind.	Cloudiness. No. of Days.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Clear.
Monroe,	61.3	85	25	38	27	1.32	7	–	5	7	19
Pittsfield,	64.3	84	26	40	7	1.28	7	–	–	–	–
Springfield,	69.9	88	*	48	11, 22	0.93	6	S.W.	–	–	–
Amherst,	66.9	91	24	36	22	0.32	9	S.W	7	13	11
Fitchburg,	67.6	92	25	41	22	0.66	2	S.W.	11	8	10
Worcester,	67.0	86	8, 24	42	22	1.47	5	S.W.	8	9	14
Framingh'm,	67.2	90	8	40	22	1.94	8	–	–	–	–
Concord,	66.8	89	†	38	22	1.81	8	S.W.	12	8	11
Lowell,	69.1	94	24	45	22	–	–	S.W.	4	17	10
Boston,	68.0	90	8	47	22	3.03	7	S.W.	11	10	10
Taunton,	66.4	87	24	37	22	1.55	5	W.	4	7	20
New Bedf'd,	66.1	83	24	44	11, 22	1.98	8	S.W.	3	18	10
Hyannis,	70.2	85	20	51	22	1.48	7	S.W.	5	7	19
Provincet'n,	67.8	83	7, 24	50	30	1.44	6	S.W.	8	9	14
Nantucket,	66.0	79	19	54	12	1.20	7	W.	9	12	10

* Maximum on 7th, 8th, 24th. † Maximum on 8th, 23d, 24th, 25th.

Summary.

Temperature (F). — Monthly mean, 67.0°; highest monthly mean, 70.2° at Hyannis; lowest monthly mean, 61.3° at Monroe; maximum, 94° at Lowell on the 24th; minimum,

36° at Amherst on the 22d; range, 58°; greatest local monthly range, 55° at Amherst; least local monthly range, 25° at Nantucket; greatest daily range, 45° at Amherst on the 23d; least daily range, 4° at Boston on the 13th and at Nantucket on the 21st and 27th. At Springfield, the mean temperature was 0.8° below the normal; at Fitchburg it was 0.6° below; at Boston 0.5° below and at Nantucket about 1° below.

Precipitation. — Average, 1.46 inches; greatest amount, 3.03 at Boston; least, 0.32 at Amherst. At Springfield, the total precipitation was 3.52 inches less than the usual amount for August; at Fitchburg it was 4.77 inches less; at Boston, 1.44 inches less; and at Nantucket 3.30 inches less.

Prevailing wind. — South-west.

Thunder-storms. — 3d, 9th, 15th, 19th, 20th.

Frost. — 22d.

Hail. — 19th, Concord.

Remarks.

The weather for Massachusetts for the month of August was cool with comparatively low maximum temperatures, and with the lowest minimum ever recorded at some places during August. There were few rainy and cloudy days and an unusual lack of rainfall. The number of thunder-storms was exceptionally small, and very little damage was done by lightning. It was a very good month for harvesting and other outdoor work, but a poor month for the proper development of crops. The drought has become very serious in all sections of the State and many correspondents report that it is unprecedented in the history of their towns. The western part of the State was not greatly affected by the drought which prevailed in July, but is suffering nearly as badly as any other district now. The correspondent at Monroe, Franklin County, reports that the month closes with the brooks, springs and wells lower than known for many years, if ever. The frost of the 22d was general throughout the State, but its damage was confined to lowlands and fields adjacent to swamps.

In the circular to correspondents returnable to us August 30th the following questions were asked : —

1. What is the condition of Indian corn?
2. What is the prospect for rowen as compared with former years?
3. What is the prospect for late potatoes and have you noticed blight or rot?
4. What is the condition of tobacco and how does the crop compare with last year?
5. What is the prospect for apples, pears, peaches, grapes and cranberries?
6. What is the condition of pasturage in your vicinity?
7. How have oats and barley compared with last year's crops?
8. Do your farmers pay much attention to the drainage of their farms and what system do they find most satisfactory?

Returns have been received from 125 correspondents, and from them the following summary has been made up.

Indian Corn.

While Indian corn has suffered less from the drought than most other crops, it still does not promise more than a three-fourths crop for the State as a whole. In the western and southeastern portions there has been the greatest injury from drought, and hardly a correspondent from these sections reports the condition as average. In many localities only half a crop is reported. In the central, eastern and northeastern sections the condition reported is better, perhaps the majority of the correspondents reporting an average crop, and some few calling it good or above average. Various correspondents throughout the State report that while stover is good, the crop is not earing out well.

Rowen.

Rowen taken as a whole is almost a total failure. Very little will be cut in any section and many fields are dry and burned. A few report an average crop, but the majority state that the crop is a total failure and the greater portion of the remainder give the proportion as less than half a crop.

Some correspondents express the fear that the drought has done permanent injury to the mowings and materially reduced the prospect for next year's hay crop.

Potatoes.

The drought has badly injured potatoes and the crop will be considerably below average in all sections. Several speak of them as "small and few in a hill." A few speak of the prospect as good but the great majority consider the crop light or below average. The quality is generally spoken of as excellent, there being little blight and less rot.

Tobacco.

Owing to the early setting and maturing of tobacco it has stood the drought quite well and though dried up in some localities will on the whole be a fair crop. Most fields will probably fall below the average in weight, but the quality and color of the leaf promise to be good. The crop promises to be much better in every way than that of last year. The sale of 2,834 cases the last week in August was reported in the tobacco trade journals of New York, the heaviest week's business in four months.

Fruits and Berries.

The apple crop is very uneven, some reporting good or fine crops while from nearby localities the crop is reported to be a failure or very light. The drought has led to the dropping of the fruit in many places and seriously injured the crop. The prospects appear to be more uniformly good in Worcester County than in any other section of the State. The crop as a whole will probably fall considerably short of an average. Quality is generally reported to be excellent. Pears are also uneven, though the prospect for an average crop is somewhat better than with apples. They are also reported to be of excellent quality. Peaches may be considered almost, if not quite, a total failure. The continued dry weather has caused the dropping of much of the remaining fruit during the past month, and the crop may now be considered as reduced almost to a minimum. Grapes will probably be a fair crop, though like the fruits already mentioned they are uneven and will not fulfill the expecta-

tions of a month ago. Cranberries are generally reported as very light and the prospect is that not half a crop will be gathered. From the southeastern portion of the State there comes but one report of a good crop and that is from a town of small commercial production.

Pasturage.

Pastures in all sections are very poor, not a single report of good condition having come in. "Dried up" and "dry and brown" are the terms most commonly used to describe the condition. One correspondent says the pastures have not been in such poor condition for 40 years while another places the limit at 50. Many correspondents report that stock is fed at the barn in nearly the same manner as in winter.

Oats and Barley.

Oats and barley suffered considerably and will fall short of average crops. In eastern sections the general condition appears to be much better than elsewhere, many reports of average crops having come in. These crops appear to have been cut green for fodder more than commonly owing to the short hay crop. Little complaint of smut or rust.

Drainage.

Comparatively little attention is paid to drainage as in many localities the conformation of the land is such as to render it unnecessary. Where draining is done tile drains appear to be found the most satisfactory, though probably more is done with stone drains and open ditches than with tile. Open ditches are unsatisfactory and do little except carry off surface water, but stone drains have been found in many instances cheap and effective. Other methods reported are pole drains laid in the same manner as stone drains, and board drains triangular in shape and set like inverted eave troughs. These latter are said to be satisfactory and to last in some instances 20 years. However, the general consensus of opinion seems to be that tile drains are the most satisfactory and cheapest in the end. It is also thought that more attention has been paid to drainage of late years than formerly.

RETROSPECT AND PROSPECT OF THE FRUIT CROP OF 1894.

It has been suggested that the Pomologist of the Board of Agriculture should make a report as to the fruit crop of the State, a review of the various conditions affecting it and the prospects for disposal of the unusually large apple crop.

A report of this kind, to be of much value to our fruit growers, would involve much travel about the State and adjoining ones, and correspondence with growers and dealers in all of the leading fruit-growing States of the Union.

There being no provision for the expenses of such work, only such facts can be given as have come under the limited observation of the writer.

Such reports are, however, needed just as much by the fruit growers to enable them to dispose of their crops to the best advantage, as are statistical reports of farm crops, of grain, manufactures, etc.

Under the circumstances the writer can report only such facts as have come under his observation over a limited portion of the State and make such suggestions as may be warranted thereby.

Retrospect.

The crop of early fruits in the State was, as a whole, good, and fairly good prices were realized. *Strawberries* in some parts of the State were injured by late frosts and later by the drouth, but subsequent rains brought on a crop of good size and quality that brought good prices.

The *raspberry* crop was light, owing to the drouth which was severe at the time of ripening, but as no rain fell during this period, the crop was secured in good condition.

In some sections rain came in time to help the *blackberry*

crop, which was good, and, owing to the scarcity of peaches in the market, brought good prices.

On thin soils, the necessity of mulching, irrigation or heavy manuring is made more evident this season as the only means by which the blackberry or raspberry crop can be made certain.

More good *cherries* were found in our markets the past season than usual. This was probably owing to the dry weather while the fruit was ripening, which was unfavorable for the growth of the fungous diseases which cause the rotting of the fruit and leaf blight, and the comparatively few plum curculios. In some cases the freedom from the attack of the plum curculio may be accounted for by the increased use of Paris green upon our apple, pear, cherry and plum trees as an insecticide.

Early apples were abundant and those put upon the market very early sold for fair prices, but as the bulk of the crop came on, hardly enough was obtained to pay for barrels or boxes, cost of picking and transportation, and unless there is a shortage in other kinds of fruit the chances for remunerative prices are very poor.

The *peach* crop in all sections of the country is very light, the government report giving the per cent as 22.3 as compared with a full crop. The fruit buds were largely destroyed before March 1, and then again after the warm weather of March and April. In this State, only old trees are showing any fruit at all, while the young trees generally show none.

The *pear* crop is much below the average, and, owing to the abundance of apples and the small demand for anything but the necessities of life, they are not selling for more than the average prices. In some orchards the effect of the drouth is such that the fruit is small and not of the best quality.

Prospect.

Grapes.

In many sections of this State the grape crop was injured by late frosts and later by the rose bugs so that the local crop will be light. The country shows a crop of about 80 per cent as compared with the full crop.

The hot, dry weather has been favorable for rapid growth, freedom from disease, early ripening and good quality. At the present time the crop is at least ten days earlier than the average season.

The berries and bunches are not yet quite up to the average in size, but the quality will be much above the average.

The outlook for paying prices is not very good unless our dealers and consumers work together to patronize home industry. Our fresh native grapes, just cut from the vines, are much superior to those from New York and the western and south-western States. After deducting the weight of basket in which the latter are packed, and the loss of moisture by long standing, it will be found that, weight for weight, native fruit, fresh from the package, should command double the price of the imported, *i.e.*, that ten pounds of fresh grapes should bring at least fifty cents.

If, however, we consider the much superior quality of our own product, we cannot but feel that there is even a much greater difference in value between the two.

This matter should receive more attention from the consumer and dealer than is now given it, for there is a greater difference between the two products in the light of healthfulness.

Late Fall and Winter Apples.

The crop of late fall and winter apples in the State is very large. The Department of Agriculture gives the per cent as 87 as compared with the largest crop, but if the present drouth continues this will be much reduced by the dropping of the fruit. The crop seems to be pretty well distributed over the entire State, though in some sections of Hampshire County there are very few or no apples.

In the eastern counties the trees are very heavily loaded, especially the Baldwins and Hubbardstons.

In many places trees that have been over trimmed on the inside are breaking down badly with the weight of fruit.

The fruit is generally fair and of good size, though on thin land and where there has been no rain for a long time they are small.

In some sections the crop was injured by the canker worm, and the necessity of being ready to fight this pest,

which has not been abundant for several years, another season, is enforced upon fruit growers in sections where it has gained a foothold.

The prospect of selling the crop at paying prices depends largely upon the crop of the entire country, and that of other countries to which we can export, and also the amount of other fruits that may be put upon our markets.

The crop of the entire country is reported at 44 per cent of a full crop, with the chances of this being still further reduced by droughts which prevail in many sections. The business conditions of the country are such as to warrant the belief that only the cheaper fruits will find a ready sale, and if the demand for exportation should be good, and the supply of oranges and bananas should be small, we may expect a large home consumption. In England and some European countries the apple crop is reported as light, and if the financial conditions of those countries warrant it, there will probably be a large demand for our product.

The good quality of our crop is much in favor of a large consumption; "the more good fruit the people have the more they want."

Should the business interests of the country revive, now that the tariff tinkering has ceased, we may hope for better prices, by holding our winter fruit in cold storage or in good fruit cellars. If, however, one has not good facilities for storing, and cannot provide such before the crop is harvested, it will be best to dispose of the crop as harvested if fair prices are offered. A good, honest article, whether made in the factory or on the farm, will command a fair price and lead to the largest possible consumption, and in the competition of fruit growing every one must make an effort to produce the best possible crop at the lowest possible cost, and those who succeed in reducing expenses and at the same time improve the products, are sure of some profit, as in all other lines of business. More brain work and better business management is what most of us farmers need. The waste products of many business concerns are often made a large source of income, and in fruit growing the lower grades of fruit that would injure the sales of our main crop should be utilized in every way possible.

Thousands upon thousands of bushels of early fall apples go to waste every year, which if taken in time and dried would yield a large income. One bushel of ordinary apples that would not sell for more than from 10 to 25 cents per bushel with the added labor of paring and evaporating would be worth 75 cents at the present prices of the evaporated product, and cheap home made evaporators can be made by any one skilled in the use of tools.

If the product is not large enough to warrant the use of an evaporator, all waste fruit should be fed to stock. It has been shown by repeated analyses that apples contain a food value for cows and horses of from 10 to 20 cents per bushel and the cost of gathering as they fall can be but little.

In addition to the value of the fallen apples for food, the fact that many insects are destroyed when they are thus utilized is of great importance, reducing the number of insects for the coming season, and consequently the cost of production of succeeding crops.

S. T. MAYNARD,
Pomologist.

NOTES OF CORRESPONDENTS.

(Returned to us August 30.)

BERKSHIRE COUNTY.

Egremont (J. H. Rowley). — Indian corn is badly injured by drought. The rowen crop is nearly a failure. Potatoes are a light crop, no blight or rot. Apples will be a fair crop, pears average, peaches and grapes injured by drought. Pastures are brown and poor. Oats and barley are about three-fourths crops. Some farmers drain their farms using tile and small stone drains.

Monterey (M. S. Bidwell). — Corn about a three-fourths crop, some fields ruined by drought. Less than half the usual crop of rowen. Potatoes about half a crop, no blight or rot. Tobacco a fair crop where planted. Apples and pears half crops, no peaches. Pastures dried up and hay being fed. Oats compared favorably with last year. Little draining done; a few tile their swamps and low lands.

Richmond (O. F. Smith). — Corn below the average owing to dry weather. Rowen poor and almost a failure. Late potatoes rather a short crop with considerable blight. Apples about half a crop, pears a little better, other fruits none. Pastures are in very poor condition. Oats and barley were full as good as last year. Not much attention paid to drainage.

Windsor (H. A. Ford). — Corn is about ten days late. There will be no rowen in this locality. Late potatoes are a very light crop, but there is little rot. Apples and pears are plenty. Pasturage is very dry and short. Oats and barley are about the same as last year. There is not much draining done.

Cheshire (L. J. Northup). — Indian corn probably 50 per cent off. Rowen not more than 10 per cent of a full crop. Late potatoes a half crop, no blight or rot. Apples half crop, pears plenty. Pastures a total failure; some farmers feeding hay and others fodder corn. Oats are about a three-fourths crop. Farmers here do not drain their land much, though now and then a ditch is dug.

Williamstown (S. A. Hickox). — Corn is about a three-fourths crop. Rowen is not 20 per cent of a full crop. Late potatoes promise a fair crop with little blight or rot. Apples are about half a crop, pears 30 per cent, grapes 20 and peaches 0.

Pasturage is short, shorter, shortest. Oats and barley are about as last year. Little attention paid to drainage.

FRANKLIN COUNTY.

Rowe (J. F. Brown). — Corn has suffered on account of dry weather but is looking very well. There is no rowen. Potatoes are a light crop of fine quality. Pasturage is very poor and dried up. Apples are dropping badly and will not be more than half a crop. Oats and barley are about three-fourths crops. Our farmers do not pay much attention to drainage.

Charlemont (H. S. Giles). — Some pieces of corn which are being cut are worth little except for fodder. The drought has injured rowen in many places. The prospect for late potatoes is fairly good, considerable blight, no rot. Tobacco injured by drought. Apples, pears, peaches and grapes all below the average. Pastures are very dry and short. Oats and barley are nearly as good as last year. Drain tiles are used in some places as are also small poles with a covering of stone.

Conway (J. C. Newhall). — Corn has suffered much from drought; on dry land there are no ears at all. The rowen crop is almost a failure. Potatoes are a very light crop, no rot. Tobacco stood the drought well and is mostly harvested, being a better crop than last year. Apples and pears good, no peaches, not many grapes. Pastures were never known to be so short and dry; cows must be fed about as in winter. Oats and barley below the average. Considerable draining has been done, formerly with stone but of late with tile.

Deerfield (Chas. Jones). — Corn a fair crop. Rowen poor, not more than an average crop. No blight or rot on potatoes, but they are not a full crop. The tobacco crop is good, better than last year. Not a full crop of apples, a few pears, no peaches, a few grapes. Pasturage is poor. Oats and barley are better than last year. Some draining is done, mostly with open drains.

Northfield (Chas. Pomeroy). — Corn probably about a three-fourths crop, dry weather injuring it. Next to no rowen. Potatoes a half crop, a little blight, but no rot. Tobacco is looking first-rate, average better than last year. Apples a three-fourths crop, pears one-fourth, no peaches, grapes one-fourth, cranberries drying up. Feed in pastures nearly all dried up. Barley about average, oats a little below. Some farmers drain with open ditches, some with stone drains and others with tile.

Montague (C. S. Raymond). — Corn on moist land about an average crop, on light soil very poor. No rowen to speak of. Potatoes a very light crop, some blight, no rot. Tobacco is

rather a light crop but the quality is fully equal to last year. On the hills there is some fruit, in the valleys very little. Pastures are dry as a road bed. Oats and barley compare favorably with last year. Not much attention is paid to drainage.

Sunderland (J. M. J. Legate). — Corn is drying up badly and there will not be much over half a crop. No rowen to speak of. Potatoes are a very light crop, no blight or rot. The tobacco crop is about all housed and though it has suffered much from drought it is better in every way than last year. All fruits are very light crops. Pastures are all dried up and the stock is being brought to the barns or fed in pasture. Oats are light. Very few drains in town except open drains which are called town drains and kept open by the town. The present season in this vicinity is the poorest in years, and if we can elect another Legislature that will put another five pounds onto onions and refuse to help us on the tax question, we will be in good shape to move to the poor house.

HAMPSHIRE COUNTY.

Greenwich (Wm. L. Douglas). — Indian corn is all drying up for want of rain. There will be no rowen at all. Late potatoes on moist land look fairly well; no blight. On high land there are some apples, on low land the frost killed all fruit. Pastures are all dry, and the stock has to be fed in the barn and grained.

Enfield (D. O. Chickering). — Corn on low lands badly damaged by frost August 22, otherwise looks well considering the dry weather. The rowen crop is an entire failure. Potatoes will be from one-half to two-thirds of the usual crop. Very little fruit of any kind. Pastures are very dry. Oats and barley lighter than last year. It is very, very dry, no rain of amount having fallen for three months.

North Amherst (H. A. Parsons). — Corn will be about half a crop. Rowen is a very small crop. Late potatoes are about a one-third crop, with some blight. Apples and peaches a failure; pears and grapes good. Pasturage is all dried up except in wet spots. Oats are a fair crop. There is not much draining done; some use board drains like an inverted eave trough in shape.

Hatfield (Thaddeus Graves). — Corn is a three-fourths crop. Rowen will not be over 15 per cent of an average crop. Potatoes are a poor crop, and there is some blight. Tobacco is in better condition than last year, not being storm whipped. The prospect for fruits is good. Pasturage is poor and dry, and many have taken stock home. Oats are a poor crop. Onions suffer more from drought than any crop. No drainage required.

Northampton (D. A. Horton). — Corn in good condition, but affected some by the drought; acreage large. No rowen at all. Many fields of late potatoes are blighted, but there is no rot. About two-thirds of the tobacco is housed and seems very good; stood the drought well. No peaches; apples a larger crop than usual; grapes good; pears extra good. Pasturage is all dried up, and most cattle are in the barn. Oat crop very fair; no barley raised except for late soilage. Quite a good deal of attention is paid to drainage; tile drains are mostly used.

Goshen (Alvan Barrus). — While some fields of corn are excellent, others are spoiled as a grain crop, by the drought. Rowen is hardly worth the harvesting. Potatoes are like the corn, good, bad and indifferent. Late frosts and dry weather have made the fruit crop uneven. Pastures where fully stocked early in the season are now worthless. Oats and barley are largely cut for feed, but where matured are better than last year. Covered and loose stone drains are used for drainage.

Worthington (C. K. Brewster). — The corn crop will be shortened by the dry season. No rowen, and meadows turning brown. Potatoes are a fair crop; a little short of average. Apples nearly average; pears quite plenty; no other fruit. Pasturage is all dried up. Oats and barley are rather short. Not much attention is paid to drainage. Season the driest ever known, and must hurt the grass fields for another year. Many people feeding stock now.

HAMPDEN COUNTY.

Blandford (E. W. Boise). — Corn has a heavy growth of stover, but is earing light on account of drought. No rowen to any amount will be cut. Many fields of potatoes are small and but few in the hill; no rot; tops green but are affected by rust. Apples good crop; cranberries injured by spring frosts. Oats and barley full average crops. No attention paid to drainage. Root crops need rain; with it an average yield may be expected.

Westfield (C. F. Fowler). — Indian corn is badly affected by drought. Rowen is very light; not over one-fourth crop. All potatoes are a light crop, and blight seems to be universal. Tobacco is mostly housed; growth good; and with suitable weather for curing bids fair for a very nice crop of light wrappers. Apples a full crop; pears fair; peaches light; grapes light. Pastures short and very dry. Little draining done; I find tile gives entire satisfaction.

West Springfield (N. T. Smith). — On good land corn is fully average; on light soil with poor culture, very poor. No rowen except in valleys on naturally moist land. Potato tops all dead;

yield about half of average; no rot. Tobacco is of good growth and quality with the exception of some late set which needs rain. Pastures dry and bare. Apples about 40 per cent; pears and grapes about average; no peaches. Oat stover was a fair growth. Both stone and tile drains have been used to a limited extent.

Chicopee (R. W. Bemis). — Indian corn in excellent condition. The dry weather has made rowen short. Late potatoes must be short; early planted yielding well. Apples and pears rather a short crop; grapes a fair crop. Pastures very much dried up. Oats and barley about as last year. Very little attention is paid to drainage, and there is not much system about that which is done; land is too cheap.

Ludlow (C. B. Bennett). — A few fields of corn were spoiled by the dry weather, but most of it is fair. No rowen at all. Late potatoes are a failure; no rot. Tobacco was a poor stand but the crop looks well. No peaches or cranberries; a few apples, pears and grapes. Pasturage all dried up. Oats about as last year. Some farmers are draining, using both stone and tile.

Brimfield (S. W. Brown). — Corn is fair on an average; some lots No. 1. No rowen; all dried up. The prospect for late potatoes is poor; no blight or rust yet. All fruits are poor crops. Pasturage has not been in such poor condition for fifty years. Oats and barley compare favorably with last year. No attention paid to drainage. Fall seeding has commenced, and much will be done in that line as it has been so dry of late years that spring seeding has been a failure.

WORCESTER COUNTY.

Warren (Wm. E. Patrick). — Early planted corn in good condition, late planted poor unless on moist land. Less rowen than at any time for forty years. Late potatoes few in a hill, of fair size, no blight. Apples fair; pears poor; grapes very poor. Pasturage about as it usually is the first of November. Oats and barley 25 per cent less than last year. Tile drainage seems to be the most satisfactory though some very good results have been obtained by blind draining with small stones. Not as much attention given to this line of farm improvement as there should be.

Barre (J. L. Smith). — Corn in very good condition considering the dry weather. No rowen to speak of. Potatoes rather poor; have noticed some blight. A large crop of apples, not much other fruit raised. Feed is very short. Oats and barley are not as heavy as last year. Not much drainage done in this section; some tile but stone drains more used.

Templeton (Lucien Gove). — Corn is well advanced toward maturity, but the drought has reduced the size of the ears. No rowen; the mowings the poorest for years. Potatoes a light crop; no blight or rot, some complaint of scab. Apples light; pears below average; peaches extremely light; grapes good. Pastures are in worse condition than for many years. Oats and barley lighter than last season. A few have practised drainage, some use stone, others open ditches, a very few use tile. Farmers are feeling the business depression this year and generally the taxes are higher than ever.

Princeton (Preston Knight). — Corn is about 90 per cent of a crop. Rowen is very light and drying up. Potatoes are a light crop, blight has touched several pieces, and one field on digging was found to be badly rotted. Apples, both early and late, plenty and good; as are also pears. Pastures are all drying up and the water supply getting short. Oats and barley average crops. No need of drainage in this section.

Leominster (W. B. Hosmer). — Corn is ripening from the drought and will probably fall off one-fourth. Rowen is very unfavorable and but a small crop, if any, can be secured. Late potatoes poor, earlier ones yielding better than was expected; no rot and but little blight. Apples an average crop; peaches and grapes very light. Pastures are dry and little to be depended on for feed. Oats and barley not more than half crops. Considerable attention is paid to drainage, both stone and tile being used, but tile is the most satisfactory.

Lancaster (S. C. Damon). — Corn a fair crop though slightly touched by frost. No rowen at all. Late potatoes poor but no blight or rot has been noticed so far. The prospect for apples, pears and grapes is fair; no peaches or cranberries. Pasturage is all dried up. Very little draining is done, but tile is used when any.

Spencer (H. H. Kingsbury). — Corn is somewhat injured from lack of rain but is now maturing rapidly. The crop of rowen is a complete failure. There is prospect for a good crop of potatoes; no blight or rot. One garden plat of tobacco which looks finely. Apples, grapes and pears good; peaches and cranberries short crop. Pasturage is very scant. Oats and barley full average crops. Very little draining done in this vicinity.

Worcester (S. A. Burgess). — Corn is good when not frost bitten; better than last year. Rowen is poor on account of drought. Potatoes of good quality, yield not large; no blight or rot. Apples large crop; pears fair; peaches very small; grapes good. Pastures badly dried up and grasshoppers destroying the

residuum. Oats better than last year; barley not so good. Stone drains covered with about two feet of soil are used for drainage.

Southborough (E. F. Collins). — Corn is good; more than an average crop. Very little rowen except on reclaimed meadows and highly fertilized fields. Potatoes are a good crop with no blight or rot. Apples are the largest yield and the best quality for many years. Pastures are rather dry and there is not much feed. Most of the best farms are drained with box stone drains.

Blackstone (L. R. Daniels). — Corn in fair condition, prospect of an average crop. Rowen about a two-thirds crop. Potatoes nearly an average crop; blight as usual, no rot yet. Apples, pears and grapes 100; peaches scarce; cranberries 75. Pasturage has suffered from drought; condition 90. Oats and barley for feeding green are as good as last year. Not much drainage of late years as there is enough land without it. In low swampy lands broad open ditches with sloping sides have been used with good effect. Where there is considerable fall, a narrow ditch $2\frac{1}{2}$ to 3 feet deep, with a foot of small stones in the bottom, is a method that has proved good. No tile or pipe used for cultivated land.

MIDDLESEX COUNTY.

Groton (Daniel Needham). — Corn is very little below the average. Rowen is very poor. Late potatoes are not good, though there is no blight or rot. Apples and pears are excellent. Pasturage is in very poor condition. Oats and barley average crops. Not much attention paid to drainage. If our farmers delay selling their hay it is not unreasonable to suppose that they will realize the full money value from this season's operations.

Littleton (G. W. Sanderson). — Indian corn is in good condition. Rowen is not an average crop. Potatoes are small and few in a hill. Apples are a big crop, also pears, no peaches. Pastures are dry. No oats and barley raised except for fodder. Low lands are drained by open ditches.

Chelmsford (P. P. Perham). — Corn is a good growth but is suffering now from drought. The prospect for rowen is very poor. Late potatoes promise fair, very little blight. Apples and pears plenty, grapes and cranberries very few. Old pastures look quite parched and brown from the drought. Early sown oats and barley were a large crop. Some draining is done here, stone are used in nearly every case.

Wilmington (E. N. Eames). — There will be an average crop of Indian corn. Rowen has suffered much from drought and is light. Potatoes are looking well, have heard of no complaints of rot or blight. Apples and pears very heavy crops, no peaches,

average crop of cranberries. Pastures have suffered much from want of rain. Very little draining done here.

Woburn (W. H. Bartlett). — None but sweet corn raised here and that is drying up. There will be no rowen except on a few meadows. Potatoes an average crop, no rot or blight. Pears a full crop, no peaches, grapes plenty, apples half a crop. Pasturage is all dried up. Oats and barley little raised except for fodder. Not much attention paid to drainage though most farms have drains of ditches in low places. Everything wilting and drying up; apple tree leaves yellow and falling; roots cannot grow; squashes lie almost flat; onions a failure; corn turning yellow.

Newton (Otis Pettee). — Corn promises a fair crop if not injured by frosts. About an average crop of rowen will be cut. Late potatoes a good crop, no blight or rot. There is a good yield of apples and pears. Pastures are suffering from want of rain and cows are fed in barnyards to some extent. While driving across the State three or four weeks ago I noticed that the farms in the central section were suffering more from drought than in the eastern part or among the Berkshire hills.

Framingham (H. S. Whittemore). — Indian corn is in good condition. Rowen is not half a crop. Late potatoes look well but early ones are very light; some show blight and some are rotting. Apples a three-fourths crop, pears half a crop, grapes very light and very few cranberries. Oats rusted badly and are not over a three-fourths crop. Very little attention is paid to drainage except some open drains.

Sherborn (N. B. Douglas). — Corn is a poor stand but otherwise a fair crop. Rowen is a light crop except on low moist land. Potatoes will be an average crop, no rust or blight. Apples a full crop on fifty per cent of the trees; pears average; no peaches; small yield of grapes and cranberries. Pasturage is dry and short. Oats and barley are about the same as last year. Not so much attention paid to drainage as there should be, mostly open ditches.

ESSEX COUNTY.

Haverhill (Eben Webster). — Indian corn has suffered a good deal from drought. Rowen will be about two-thirds of an average crop. There is no rot in potatoes, but the crop is light on account of the drought. There will be less of all kinds of fruit than usual. Pastures are dried up. Drainage is not extensively practised and open drains or blind stone drains are mostly used.

West Newbury (J. C. Tarleton). — Indian corn is in very good condition. Rowen is not as good as in former years as the dry weather has affected it. Potatoes are not a very good crop on

account of drought, no rot as yet. Apples very good, pears not very plenty, peaches and cranberries very few. Pasturage is very good. Very little drainage is done but tile is the most satisfactory.

Newbury (Geo. W. Adams). Corn is in very good condition and the crop will be a fair average. Rowen is much less than in former years. The condition of late potatoes is good to fair, a little rust and blight, but little rot. Apples small to fair, pears good, peaches good, grapes and cranberries poor. Pasturage is very short and dry. Oats and barley are about the same as last year for early and low land, less for late and high. Not much draining done though some tile is used.

Ipswich (O. C. Smith). — There will be about an average crop of Indian corn. On wet low land the rowen crop is good, on high land hardly any. Potatoes are better than was expected, some blight and a little rot. Fruit crops all promise to be good except peaches. Pastures are short and need rain. Oats and barley about as last year. Not much attention is paid to drainage though most farmers have surface drains.

Topsfield (B. P. Pike). — It is too dry for corn to fill out well. There will be very little rowen cut. Some potatoes on low land are very good, others light, no blight. Apples a full crop on most farms, pears plenty, no cranberries. Pastures are dry and short. There is very little grain threshed in this vicinity. Our farmers do not drain much, they are thinking more of irrigating at the present time.

Marblehead (Wm. S. Phillips, Jr.). — Corn is in fair condition. Rowen is not quite up to the average. In some fields of potatoes the lateness of the crop will be the only out, in others the rust and drought are making havoc. There is a fair crop of apples in some orchards. Pasturage is very poor indeed. Most farms here have to be drained, open ditches are the rule, but where land has been tiled the best results are shown. During the last month it has been very dry and many wells and springs show no moisture.

NORFOLK COUNTY.

Medway (Monroe Morse). — Corn is injured by drought and will be below average. There is practically no rowen. Potatoes will be a light crop, no rot, but the leaves have a blighted appearance from the ravages of the flea beetle. Apples good; pears good; peaches few; grapes fair. Pastures are very brown and short. Oats and barley are grown only for fodder. Only a few farmers have put in drains. I have laid 250 rods, using tile, and am much pleased with the result.

Franklin (C. M. Allen). — Much of the corn is very light by reason of drought. Rowen a very light crop. Very few fields of potatoes are up to the average, 60 per cent of full crop. Apples and pears average; peaches 10 per cent; grapes 75 per cent; cranberries 60 per cent. Pastures are very bare. Oats and barley nearly equal to last year. But little land is drained. Stone drains are generally used and are found satisfactory. Abundant showers have revived vegetation and improved crops greatly.

Medfield (Geo. R. Chase). — Corn is poor and not filling out on account of drought. Rowen is a failure on account of drought. The prospect for late potatoes is very poor, but I have noticed no blight or rot. Apples good; pears good; peaches poor; grapes average and cranberries a small crop. Pasturage is ruined by drought. Oats and barley are 80 per cent of last year's crops. Little attention paid to drainage, stone drains and open ditches mainly used.

Cohasset (E. E. Ellms). — Corn is very good indeed. Rowen is not up to former years. Potatoes are a poor crop; have noticed blight and some rot. There is a great crop of all kinds of fruit in this vicinity. Pasturage is very dry and poor. Oats and barley are about the same as last year. Little attention paid to drainage.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — Indian corn is an average crop. Rowen will be an average crop. The prospect for late potatoes is good and there is no blight or rot. Apples, pears and grapes are average and cranberries will be a one-fourth crop. Pasturage is short. Oats and barley were average crops. There is no special system of drainage used.

Raynham (N. W. Shaw). — Corn will be a very light crop as a whole. There is but very little rowen. Potatoes are not up to the average; no blight or rot. Apples a good crop; pears not many; peaches very few; grapes a one-half crop; cranberries small crop. Pastures have dried up and stock is fed in the barns. Threshed oats are light. Little attention is paid to drainage as there is not much necessity for it. All springs are low and water must be used with care.

Somerset (Joseph Gibbs). — Corn is 80 per cent of a full crop. The prospect for rowen is poor. Potatoes are a light crop; about 65 per cent; no rot. No cranberries; other fruits about three-fourths crops. Pasturage is in poor condition. Oats and barley average crops. Turnips did not come up well. Surface drainage is the only system practised. This has been the worst season on

the whole for years; crops much below the average, and prices lower still.

Dartmouth (L. T. Davis). — Indian corn about 85 per cent of full crop. Rowen is not over 10 per cent of a crop. Potatoes a little more than half a crop; no rot. Apples 85 in condition; pears 90. Pasturage is very short; stock having to be fed in barns. Not much threshing done yet; but oats and barley are perhaps three-fourths crops. Some drainage in this section with small stones and tile drains.

PLYMOUTH COUNTY.

West Bridgewater (F. E. Howard). — Indian corn has suffered, and is suffering extremely from the drought. Rowen very poor indeed. Potatoes a very poor crop; have not noticed blight or rot to any extent. Apples and pears plenty; peaches, grapes and cranberries scarce. Pasturage is short. Oats and barley were smaller crops than last year. Not much attention is paid to the drainage of farms, open drainage being most practised.

Marshfield (J. H. Bourne). — Corn a three-fourths crop, and not as good as a month ago. Very little rowen here. Late potatoes not as good as early; no blight or rot. Apples abundant, also pears, peaches and grapes not quite up; cranberries suffering from worms, and not over half a crop. Pasturage is in poor condition. Oats and barley much smaller crops than last year. Some meadows are drained with open ditches, and some with tile. Our dike meadows all need draining, but this year the dry weather was too much for them, the salt being drawn up from the bottom and the water evaporating and leaving the salt near the surface, thus injuring the roots of the crops.

Kingston (J. H. Cushman). — There will not be over a two-thirds crop of corn. Rowen is not more than a one-fourth crop. There will be a very light yield of late potatoes, and on some fields they have commenced to rot. Good prospect for apples; pears and peaches scarce; grapes fairly good, also cranberries. Pastures very dry; we have to feed our cows daily. Oats not more than half a crop. Low lands are drained with ditches filled with stone.

Halifax (G. W. Hayward). — Corn not in very good condition, and the crop will be light. No rowen for miles around; most fields as dry as when cut. Potatoes will be light; no rot. Fruit very poor, except apples, which will be a fair crop. There is no pasturage, as we have had no rain to help the pastures this summer. Oats and barley are sown only for fodder, and are light. Very little done in the way of drainage except by open ditches; very little tile drain in this vicinity.

Lakeville (Elbridge Cushman). — Corn is suffering for want of rain. No rowen to speak of. The yield of potatoes will be small, but of good quality. Apples and pears are abundant; no peaches; few grapes; cranberries light, and many are already killed by frost. Pastures are entirely dried up. Oats were affected by blight. Drainage is receiving some attention, but in many cases ridging the land, just allowing the mowing machine and hay wagon to pass over proves more satisfactory.

BARNSTABLE COUNTY.

Sandwich (J. R. Holway). — Drought has about ruined many fields of corn. There is very little rowen. Late potatoes will be a small crop, some blight but no rot. Apples, pears and grapes quite plenty, some peaches and very few cranberries. Pastures are all dried up and nearly all feed in the barn. Very little land needs draining, more needs irrigation. There is practically nothing to harvest in this section except a little fruit.

Mashpee (W. F. Hammond). — Indian corn is looking very well for the season. Rowen is a failure. Late potatoes will be small, no blight or rot. Apples, pears and grapes a fair crop, no peaches, cranberries a small crop. Pasturage is short and drying up very fast. Oats have been a failure. Our subsoil is nearly all coarse sand and gravel and natural drainage is sufficient.

Barnstable (John Bursley). — Corn is an average crop. No rowen at all. Late potatoes will be a very light crop, very little blight or rot. Small crop of apples, pears fair crop, no peaches, few grapes, cranberries 25 to 35 per cent of a crop. Pastures are all burned up. Oats are grown only as a fodder crop and rusted quite badly. A few drain a little with stone drains. Probably 1,000 feet of tile are laid yearly which gives the best service.

Brewster (J. H. Clark). — Corn is in fair condition. Scarcely any rowen at all on account of drought. Potatoes are a very light crop, no blight or rot. All kinds of fruit are very light. Pasturage is all dried up. Oats and barley were about average crops. Not much attention is paid to drainage.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Corn very much injured by drought. There will be no rowen. Late potatoes poor, no blight or rot. Apples fair, pears good, grapes injured by drought, cranberries small crop. Pasturage is in very poor condition. Oats and barley not as heavy as last year. We do not drain our land.

STATISTICS OF MASSACHUSETTS AGRICULTURE.

(Compiled from Census Bulletins, 1890.)

Farms.

In enumerating farms no farm was reported by the census enumerators of less than 3 acres unless $500 worth of produce had been actually sold from it during the year; and all land once ploughed was considered improved, unless afterward abandoned for cultivation. The total number of farms was given as 34,374, with a total of 2,998,282 acres divided as follows: — improved, 1,657,024; unimproved, 1,341,258. The total number of families connected with these farms was given as 34,576 divided as follows: — owning, 29,370 (free, 20,425; incumbered, 8,945); hiring, 5,206. The percentage of families owning was 84.94, and of hiring, 15 06. The percentage of families owning free of total owning families was 69.54, and incumbered, 30.46. The percentage of families owning free of total owning and hiring families was 59.07, and incumbered, 25.87. The number of families owning with incumbrance was 8,945; value, $28,249,173; incumbrance, $11,831,941; percentage of incumbrance of value, 41.88. The total annual interest charge was $659,865; average annual interest charge, $74; average annual rate of interest, 5.58. The valuation of land, fences and buildings was $127,538,284. Valuation of implements and machinery, $5,938,940. Valuation of live stock on hand June 1, 1890, $14,200,178. Estimated value of farm products, $28,072,500.

Live Stock and Live Stock Products.*

The following live stock was reported on hand June 1, 1890; horses, 63,638; mules, 157; asses, 39; total neat cattle, 256,128, the number being made up of 9,831 working oxen, 172,046 milch cows, and 74,251 head of other cattle; swine, 91,483; sheep not including spring lambs, 51,438. The number of fleeces shorn in

* The value of products was estimated by the farmers when there was no exact account kept of the same.

the spring of 1890 and fall of 1889 was 47,862, which made 241,-314 pounds of wool. The dairy products for 1869 were as follows: gallons of milk, 15,284,057; pounds of butter, 6,559,161; pounds of cheese, 2,245,873; for 1879, gallons of milk, 29,662,-953; pounds of butter, 9,655,587; pounds of cheese, 829,528; for 1889, gallons of milk, 82,571,924; pounds of butter, 8,358,-703; pounds of cheese, 122,900.

Crops of 1889.

There were 1,785 acres of barley yielding 38,715 bushels; 2,473 acres of buckwheat yielding 31,300 bushels; 34,010 acres of Indian corn yielding 1,330,101 bushels; 14,331 acres of oats yielding 388,819 bushels; 10,665 acres of rye yielding 117,091 bushels; 112 acres of wheat yielding 1,813 bushels; 1 acre of flax yielding 4 bushels; 2,012 acres of tobacco yielding 2,794,848 pounds; 2 acres of hops yielding 800 pounds (1 in Middlesex County, 1 in Bristol County); 1 acre of broom corn yielding 800 pounds; 2,310 bushels dry Canada peas; 618 bushels cow peas; and 11,300 bushels of dry beans. Statistics of hay, potatoes and other farm crops have not yet been published.

In acreage of barley Worcester County led with 803 acres, followed by Berkshire County with 239 acres, Franklin County with 181 acres, Middlesex County with 131 acres, and Essex County with 127 acres. In acreage of buckwheat Berkshire County led with 1,379 acres, followed by Hampden County with 465 acres, and Worcester County with 206 acres. In acreage of Indian corn Worcester County led with 6,516 acres, followed by Hampshire County with 5,652 acres, Hampden County with 5,260 acres, Franklin County with 4,596 acres, Berkshire County with 3,876 acres, and Middlesex County with 2,627 acres. In acreage of oats Berkshire County led with 7,209 acres, followed by Worcester County with 1,631 acres, Franklin County with 1,623 acres, and Hampshire County with 1,433 acres. In acreage of rye Hampden County led with 3,348 acres, followed by Berkshire County with 2,227 acres, and Hampshire County with 2,100 acres. In acreage of wheat Franklin and Worcester counties each reported 27 acres, followed by Essex County with 13 acres, and Middlesex County with 12 acres.

The total area in cereals in 1889 was 63,376 acres, as compared with 104,631 acres in 1879, a decrease of 41,255 acres, or 39.43 per cent. All the cereals show a diminished acreage; the decrease in barley, buckwheat, corn, oats, rye and wheat being 1,386; 3,144; 18,545; 6,328; 11,001; and 851 acres respectively.

Horticulture — Nurseries.

Number of nurseries, 120: acres of land, 1,891; value per acre, $404.71; total value, $1,393,666.80; value of implements, $37,249.20; total capital invested, $1,773,500; number of men employed, 540; number of women employed, 22; wages paid men per day, $1.63; wages paid women per day, $1.00; number of horses and other animals employed, 270; total acreage of nursery trees and plants of all ages, 655; apple, 54; peach, 6; pear, 3; plum, 3; deciduous, 152; evergreen, 99; hardy shrubs, 189; rose, 2; grape vines, 1; strawberry, 94; raspberry, 31; blackberry, 18; currant, 3; number of salesmen employed, 60; monthly wages paid salesmen, $42.50; number of wholesale catalogues issued, 25,000; number of retail catalogues issued, 140,000; amount paid for newspaper advertising, $11,175.60; amount paid for postage, $8,828.40; amount paid for freight bills, $20,895.60; amount paid for express bills, $8,533.20; estimated amount paid for freight and express on outgoing shipments, $34,560.

Floriculture.

Number of florists' establishments, 407: owned and managed by women, 25; square feet of glass reported for one establishment, largest number, 40,000, smallest number, 400; total square feet of glass, 2,717,946; area of land cultivated (acres), 467; value of tools and implements used, $104,090.25; total value of establishments, $2,663,587.08; number of men employed, 814; wages paid men per day, $1.67; total wages paid men, $407,814; women employed, 64; wages paid women per day, $1.05; total wages paid women, $20,160; number of horses employed, 305; cost of fuel used, $101,326.72; wholesale catalogues issued, 40,700; retail catalogues issued, 770,044; paid for postage, $20,768.89; paid for advertising, $41,469.23; paid for freight, $46,707.32; paid for express, $40,327.88; estimated freight and express bills on outgoing shipments, $46,176.01; roses propagated, 884,411; hardy plants propagated, 1,275,945; all other plants propagated, 9,320,600; total plant sales, $594,053.13; total cut-flower sales, $1,036,409.22; per cent of stock sold at wholesale, 49; per cent of stock sold at retail, 51.

Honey and Beeswax.

There were produced in Massachusetts in 1869, 1,195 pounds of beeswax and 25,299 pounds of honey: in 1879, 2,463 pounds of beeswax and 49,397 pounds of honey; and in 1889, 1,690 pounds of beeswax and 90,929 pounds of honey.

Poultry and Eggs.

Poultry on hand June 1, 1880, exclusive of spring hatching, barnyard, 914,327; other, 48,594. Eggs produced in 1879, 6,571,553 dozens. Poultry on hand June 1, 1890, domestic fowl (chickens) 1,623,605; other, 84,777. Eggs produced in 1889, 8,931,398 dozens.

It is regretted that statistics pertaining to hay, potatoes, market garden crops, fruits, berries, etc., are not yet obtainable.

F. H. Fowler,
First Clerk.

SERIES OF 1894. BULLETIN NO. 5.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF SEPTEMBER, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

BOSTON:
WRIGHT & POTTER PRINTING CO., STATE PRINTERS,
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1894.

Crop Report for the Month of September, 1894.

Office State Board of Agriculture,
Boston, Mass., Oct. 1, 1894.

With the issue of October 2 the weekly crop bulletins issued by the New England Weather Service in co-operation with this Board ceased for the season. It is expected that these bulletins will be sent to those on our mailing list with the coming of the next growing season. Particular attention is called to the article on the "Regulative Influence exerted by Birds on the Increase of Insect Pests," by the Ornithologist of the Board, which appears on the last pages of this Bulletin.

Progress of the Season.

Report No. 119 (September, 1894) of the Statistician of the United States Department of Agriculture shows a decline in the condition of corn to 63.4 from 69.1 in the month of August, and 95 in the month of July. The change is marked in nearly all the great corn States. Reports from eight States, viz , Indiana, Illinois, Wisconsin, Iowa, Missouri, Kansas, Nebraska and South Dakota, show that out of an aggregate of 40,873,984 acres planted in those States there have been cut up for fodder or abandoned 15,506,000 acres, or 38 per cent, which is a little over 20 per cent for the entire country.

The condition of wheat when harvested, considering both winter and spring, was 83.7 against 74 last year and 85.3 in 1892. In the principal wheat States there has been considerable improvement since the July report.

The average condition of oats is reported at 77.8 as against 76.5 on August 1, 77.7 on July 1, and 87 on June 1, a decline of nearly 10 points since June. The condition has been lower at the same date in the last ten years only in 1892 and 1893. Damages from the army worm and grass-

hoppers are reported in a few localities, but the principal cause of the low condition has been the drought. In the Rocky Mountains and on the Pacific coast high condition is shown.

The returns for rye show an average condition of 86.9 against 82 a year ago, and 88.5 in 1892. It was lower in 1887, 1890 and 1893, but higher every other year of the past decade.

The condition of barley has risen nearly 2 points during the month and stands at 71.5 against 69.8 in August. This shows a falling off from the June condition of nearly 11 points and indicates a light yield. It is the lowest September average during the last decade.

There is a decline in the September condition of buckwheat of 12½ points since August. The condition of this cereal, 69.2, is the lowest recorded during the decade. The chief cause of the low condition is the drought.

The condition of potatoes for the whole country is 62.4, nearly 12 points lower than in August. This is the lowest September condition in the last ten years. Condition last year 71.8, and for 1892, 74.8.

The condition of tobacco is 74.5, ranging from 51 in Missouri to 92 in Connecticut and North Carolina. In some sections the crop has suffered from an excess of rain, or from hail and wind storms, but the chief cause of the low average is the widely prevalent drought.

A decline is shown in the condition of cotton of 5.9 points from the August condition, being 85.9 against 91.8 for that month. The principal cause of the decline was excessive rainfall throughout the cotton belt. In some portions of some States blight, rot, rust, shedding and premature opening of the bolls are reported. Boll worms and caterpillars are also doing some damage.

The average condition of apples has declined from 44 to 40.8. Condition is highest in New England, where percentages range from 69 to 89, and in the mountain and Pacific States, where the range is from 50 to above normal.

The condition of peaches is now 21.1. But three States east of the mountain States have a condition of 60 or over, viz., New Hampshire, New Jersey and Michigan. The

highest condition is in Colorado, 94, and California is next with 89.

The condition of grapes is higher than for apples and peaches, though the prospect is poorer than at the same date in several years past. The low condition is generally ascribed to late frosts in spring.

Rice is 89.4 in condition, but 1.6 points below August condition, the returns being generally very favorable.

The reports on sugar cane are in general favorable. Its condition in Louisiana averages 100; in the Gulf States, ranges from 89 to 98, while in South Carolina it is 99.

The area under clover-seed is reported at 71.9 per cent of that of 1893. The reduction is due to the cutting of many fields for fodder which would have been saved for seed, but for the drought. Condition is 63.3, or much below average, indicating a very short crop.

The number of stock hogs for fattening as compared with last year is 90, a reduction of 10 per cent, and the average condition as to weight and size is 91.3, a deficiency of 8.7 per cent. Disease has figured but slightly in the reduction of number and condition.

In Massachusetts the average condition of corn September 1 is given as 76; the average condition of rye when harvested as 98; the average condition of oats when harvested as 94; the average condition of barley when harvested as 91; the average condition of buckwheat September 1 as 92; the average condition of potatoes as 78; the average condition of tobacco as 90; the average condition of apples as 89; the average condition of peaches as 34; the average condition of grapes as 86; the number of stock hogs fattening as 91; the average condition of stock hogs as to weight and size as 100.

Temperature and Rainfall for the Whole Country.

From United States Weather-Crop Bulletins.

Week ending September 3. — Week slightly cooler than usual in New England, Florida, Louisiana and generally throughout the plateau regions, but no marked deficiency. In all other portions of the country the week averaged warmer than usual. During the week the rainfall was decid-

edly in excess over the greater portion of the western half of the cotton region; also over the Florida peninsula, portions of Georgia, Kansas and Missouri. Slightly in excess on the north Pacific coast and over portions of Idaho, Wyoming and Montana. Over much the greater portion of the agricultural regions the rainfall during the week was less than usual. In the western portion of the cotton region there was too much rain for cotton and the crop was injured. Drought conditions generally prevailed throughout the northern districts east of the Rocky Mountains. Pasturage generally poor. Extensive forest fires in Minnesota and Wisconsin destroyed much property and caused great loss of life.

Week ending September 10. — Cooler than usual in the Rocky Mountains and plateau regions and southern California. In all districts east of the Rocky Mountains, except extreme southern Florida, it was warmer than usual. During the week copious rains fell over the greater portion of the Southern States, Kansas, Missouri, southern Iowa, and from Wisconsin and northern Illinois eastward to the middle Atlantic States. Portions of the Dakotas and an area extending from Colorado northwestward to Washington had a generous rainfall. Elsewhere less than the average amount of rain fell. The recent rains have benefited late corn in New Jersey, Pennsylvania, Maryland, Illinois, Missouri and Kansas, but were too late to be of benefit to early corn. The week was favorable to cotton in the Carolinas, Tennessee and Texas, and the crop is slowly improving in Georgia. Elsewhere heavy rains have proved injurious. The tobacco crop is practically secured in New York and Pennsylvania. Plowing for fall seeding has progressed rapidly where rain has fallen. Frosts occurred in Colorado, Idaho, Wyoming, Montana, Minnesota and New England.

Week ending September 17. — East of the Mississippi River and on the central and southern California coast the week was warmer than usual. From the central and lower Mississippi valley, westward over the Rocky Mountains districts, cooler than usual. Freezing temperatures occurred in the Dakotas and northern Minnesota, a minimum of 22 being reported from northern Minnesota on the 17th. More than the usual amount of rain fell in the central Mississippi

and lower Ohio valleys, over portions of New England and the Lake region, and over the greater portion of the Southern States. Also more than usual on the north Pacific coast and in portions of Montana and Utah. Elsewhere less than the usual amount of rain fell. In the principal corn States much of the corn has been cut and is now safe from frost. Except in the Carolinas, Florida and western Texas the week was unfavorable for cotton, continued rains having caused rust and shedding. Week especially favorable for pasturage and plowing for fall seeding.

Week ending September 24. — Average temperature conditions prevailed during the week in southern Florida, the Mississippi Valley and in the lower portions of the Ohio and Missouri valleys. On the Atlantic coast north of Florida, and over the Lake region week warmer than usual. Week warmer than usual from Nebraska, Kansas and Texas westward to the Pacific, except on the immediate coast of southern California, northern Oregon and Washington. More than the usual amount of rain fell in Florida and from the Carolinas northward to New England. More than average rainfall over portions of the Lake region and upper Mississippi valley, and portions of Montana, Arkansas, Kansas and Texas. Abundant rains generally throughout the Atlantic coast States. In the lower Ohio and upper Missouri and lower Mississippi valleys and throughout the Rocky Mountain and plateau regions less than the usual amount of rain fell. No rain fell in Nebraska, western Kansas, and from Colorado, Wyoming and Idaho northwestward to the Pacific coast. Fall plowing and seeding has progressed rapidly, corn cutting has been pushed vigorously, and in Indiana and Illinois the crop is out of danger from frost. The week was favorable for cotton-picking, which has been pushed rapidly. On the Pacific coast the weather is especially favorable for securing crops and drying fruits.

New England Weather and Crops.

From United States Weather-Crop Bulletins.

Week ending September 3. — Little sunshine and very little rain; many wells and springs that never failed before are dry; too dry for plowing or seeding; crops maturing

rapidly and being harvested; potatoes variable, but on the whole fair crop; little decay reported.

Week ending September 10. — Showers have been general and crop conditions slightly more favorable, except where damaged from frost in northern sections on 8th; water supply still very short and pastures poor, affecting milk supply very seriously both in quantity and quality.

Week ending September 17. — Weather favorable; little damage from frosts; rains heavy in central and north-west portions, light in east; fall plowing and seeding begun and seed starting well; harvesting under way; cranberries very light; corn good; late potatoes better than expected.

Week ending September 24. — Warm with much sunshine; moderate rain in north, and from four to five inches in south-west; late forage, garden crops and grass lands improving wonderfully; harvesting well along; apples variable, but generally a good crop of fine quality.

Massachusetts Weather.

Meteorological Data for September, 1894.

[Furnished by the New England Weather Service.]

STATION.	Temperature. Deg. F.					Precipitation.		Prevailing Wind.	Cloudiness. No. of Days.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Clear.
Pittsfield,	61.6	84	11	34	26	5.91	11	–	–	–	–
Springfield,	66.0	90	10	38	26	5.31	9	W.	–	–	–
Amherst,	63.7	91	10	32	26	4.11	8	S.W.	10	7	13
Fitchburg,	63.2	90	9	35	26	3.97	9	N.	8	10	12
Worcester,	63.5	85	9, 10	38	26	3.16	10	W.	7	12	11
Framingh'm,	63.8	90	10	31	26	2.78	7	–	–	–	–
Concord,	63.0	92	10	36	26	2.21	8	S.W.	–	–	–
Lowell,	66.3	92	9	38	27	–	4	S.W.	8	15	7
Boston,	64.8	88	9	42	26	2.14	6	S.W.	11	8	11
Taunton,	65.1	90	9	34	13	3.17	5	S.W.	9	8	13
New Bedf'd,	64.4	84	9	40	12, 13	2.91	9	S.W.	8	8	14
Hyannis,	67.2	85	9	50	12, 26	2.94	5	S.W.	6	4	20
Provincet'n,	65.7	84	9	49	13	1.90	6	E.	10	11	9

Summary.

Temperature(F). — Monthly mean, 64.7° ; highest monthly mean, 67.2° at Hyannis ; lowest monthly mean, 61.6° at Pittsfield ; maximum, 92° at Lowell on the 9th and Concord on the 10th ; minimum, 31° at Framingham on the 26th ; range for Massachusetts, 65° ; greatest local monthly range, 59° at Amherst and Framingham ; least local monthly range, 35° at Hyannis and Provincetown ; greatest daily range, 41° at Amherst on the 8th ; least daily range, 2° at Lowell on the 30th. At Springfield the mean temperature for the month was 2.9° above the normal ; at Fitchburg it was 2.5° above, and at Boston 2.6° above.

Precipitation. — Average, 3.38 inches ; greatest amount, 5.91 at Pittsfield ; least, 1.90 at Provincetown. At Springfield the rainfall was 1.78 inches above the normal for the month ; at Fitchburg it was 0.49 inches above, and at Boston, 1.03 inches below. The rainfall was generally heaviest

in the western and northern counties, and least in the south-eastern.

Prevailing Wind. — South-west.

Thunder-storms. — 10th, 15th, 16th, 17th.

Killing Frost. — 26th on low lands in western and northern towns.

Remarks.

The month of September was generally favorable for ripening crops and for harvesting. The weather was warmer than usual, while the monthly extremes of temperature were very great. The warmest spell was on the 9th–11th, and the coldest on the 26th–27th. On the last-named dates a killing frost prevailed on all low lands, though most crops likely to be injured had been gathered. On high lands only vines and corn leaves were nipped.

A heavy thunder and wind storm passed easterly across the northern part of the State on the 10th, giving almost four inches of rain in a few hours at Winchendon, and doing considerable damage to buildings, trees and fruit in narrow strips in Worcester and Franklin counties; but over the greater part of the State the drought remained practically unbroken until the third week in the month. These rains gave the ground a good soaking and helped the wells and streams, but very much more will be needed to make a full water supply for winter and to put the grass lands in the best condition. Except the storm mentioned above on the 10th, the thunder-showers were light, and there were practically no damaging winds. The storm of the 30th whipped off considerable many apples along the coast, but its damage did not extend far inland. The month closed with the meteorological conditions very favorable for fields and pastures, new seeded pieces and late forage and root crops.

In the circular to correspondents returnable September 28, the following questions were asked : —

1. How does the crop of Indian corn compare with an average crop?
2. Are the rowen crop and fall feed up to the usual average?
3. Has the average amount of fall seeding been done, and what is its present condition?
4. Is the onion crop average, and if not, what were the drawbacks?
5. Are potatoes an average crop in yield and quality?
6. What is the prospect for root crops?
7. How have the apple and cranberry crops turned out?

Returns have been received from 107 correspondents, and from these the following summary has been made up : —

Corn.

Indian corn suffered considerably from the drought and the crop will fall materially below the usual average. A few correspondents speak of the crop as "good" or "average" but the greater majority note a falling off of from 10 to 50 per cent. Probably as fair an estimate as could be made would place the crop at three-fourths the usual average. There is some complaint of the crop not earing out well and the ears being small. The stover has generally attained an average growth. In the north-eastern portion of the State the crop approaches quite nearly to an average, but is even there a little below.

Rowen and Fall Feed.

There is little change in the condition of rowen as reported in the August bulletin. The rains of the latter part of the month came too late to help it, and the crop is almost a total failure. Fall feed was considerably improved by the recent rains, but is still far from being in average condition. With sufficient rains from now on it may improve so that the condition will be fair, but the late start it received will tend to keep the condition permanently low.

Fall Seeding.

Rather less than the usual amount of fall seeding has been done owing to the dry weather, which prevented ploughing and rendered uncertain the germination of the seed. Much seed has come up since the rains which has lain in the ground for several weeks, and it is thought that now the drought is broken enough seeding will be done to bring the amount up to the usual average. Seeding already done is late and the condition rather poor than otherwise, but the late rains have started it and the prospect is that with a fair amount of rain the condition will continue to improve.

Onions.

Onions are as a rule a light crop, though some speak of them as average. The principal, in fact almost the only drawback, has been the severe drought. This has caused blight in many cases, and where it has not resulted in blight, the crop has been materially reduced. Very little complaint is made of maggots or other insects.

Potatoes.

Potatoes are generally considerably less than an average crop, though the yield appears to be somewhat better than was expected a month ago. Reports of average yields are by no means rare and some even speak of the crop as good. In the western and south-eastern sections of the State the condition falls far short of that in other sections. For the State as a whole there is probably a three-fourths crop and possibly more. The quality is almost universally spoken of as good, there being very few complaints of rot or scab. The cooking qualities of the crop are also well spoken of.

Root Crops.

Root crops hardly promise to be more than fair, though they have shown marked improvement since the late rains. Turnips are particularly poor, there being considerable complaint of failure to come up and small size. Most correspondents state that abundant rains will do much to improve the root crops.

Apples and Cranberries.

The apple crop is very uneven, some correspondents reporting fine crops and others that there are absolutely no apples. For the State at large the crop is probably less than average, though where there is any fruit at all the crop is fine. Apples are generally of large size and fine color and the crop is somewhat earlier than usual. Late frosts in the spring are given as the cause of the uneven condition of the crop.

Cranberries are not reported as more than half a crop in any section of commercial importance, and in many towns even a smaller proportion is reported. From Barnstable County comes the report that many bogs are not worth picking.

NOTES OF CORRESPONDENTS.

(Returned to us September 28.)

BERKSHIRE COUNTY.

Egremont (J. H. Rowley). — Corn is 25 per cent less than an average crop owing to the drought. Rowen and fall feed are not up to the usual average. Less than the usual amount of fall seeding has been done. Onions a good crop. Potatoes not average in quantity but fully up in quality. Root crops about average. Apples very good, of fair size and good flavor.

Becket (Wm. H. Snow). — Indian corn falls short a good deal owing to dry weather. Rowen and fall feed are not half the usual average. The average amount of fall seeding has not been done as it is too dry. Potatoes are fully an average crop. Root crops are late, doing well since rain. Apples will be average in quantity, but are of small size.

Richmond (O. F. Smith). — Indian corn about a three-fourths crop. Rowen and fall feed not within 50 per cent of their usual condition. Less than the average amount of fall seeding has been done, but that done looks well. Onions less than an average crop because of dry weather. Potatoes about a three-fourths crop of good quality. Root crops promise to be pretty fair. About half a crop of winter apples.

Hancock (C. H. Wells). — Indian corn is about two-thirds of an average crop. Rowen and fall feed are below the usual average on account of the drought. Very little fall seeding has been done, condition poor. Onions half a crop because of dry weather. Potatoes little more than half a crop, good quality, no rot. The prospect for root crops is not good. Apples scarce, no cranberries.

Hinsdale (S. M. Raymond). — Corn is more than an average on wet land and but half a crop on dry land. No rowen and little fall feed. The average amount of fall seeding has been done and the condition is good. Potatoes are more than an average on wet land and on dry land half a crop. The prospect for root crops is fair. Apples and cranberries good crops.

Cheshire (L. J. Northup). — Corn about a three-fourths crop. Rowen and fall feed are off 90 per cent from the usual average.

Fall seeding is now being done. Potatoes 40 per cent off from a good crop, quality good. Prospect for root crops very poor. Apples a three-fourths crop.

FRANKLIN COUNTY.

Colrain (A. A. Smith). — Indian corn half a crop. Rowen and fall feed not up to the usual average. The average amount of fall seeding has not been done and what has is late. Potatoes are not an average crop. The prospect for root crops is fair. Apples are a good crop.

Bernardston (R. H. Cushman). — Some pieces of corn very good, others poor; probably 85 per cent of an average crop. Rowen light; fall feed starting well now but short. The full average quantity of fall seeding was done, but it is late. Potatoes a better crop than was expected; of good quality. Root crops will be light. Apples a large crop in some locations; poor and light in others.

Ashfield (Chas. Howes). — Corn is a full average crop except on some very dry pieces. Rowen and fall feed light. Seeding has been late but is now starting nicely, and with favorable weather in October will do well. Potatoes are a good crop of good quality. The root crop is growing splendidly and will be a good crop. Apples are very plenty; of excellent quality and high color.

Whately (Frank Dickinson). — Indian corn is less than an average crop. Rowen and fall feed are not up to the usual average. The average amount of fall seeding has been done, and it is in good condition. The onion crop is not up to the average because of dry weather. Potatoes less than an average crop of good quality. Root crops are less than an average. The apple crop is enormous; no cranberries.

Leverett (W. L. Boutwell). — Indian corn is not over two-thirds of an average crop. Rowen and fall feed are almost an entire failure. About half the usual amount of fall seeding has been done, and it has not done well. Onions are less than half a crop owing to dry weather. Potatoes are a trifle only below average. Root crops are about average. Apples are very poor; the late frost in the spring spoiled most of them.

Northfield (Chas. Pomeroy). — Indian corn 80 per cent of a full crop. Rowen and fall feed not up to the usual average. The usual amount of fall seeding has been done, but on account of the severe drought it was mostly done later than usual. Onions not an average crop owing to dry weather. Potatoes a three-fourths crop of good quality. Root crops not average. Apples a full crop; cranberries half a crop.

Orange (Ansel Harrington). — Indian corn about three-fourths of an average crop. Not over one-fourth of an average crop of rowen; fall feed short, but doing well now. Very little fall seeding has been done owing to dry weather, and what has been done is backward. Potatoes about a three-fourths crop of average quality. Apples about half a crop.

HAMPSHIRE COUNTY.

Greenwich (Wm. S. Douglas). — Dry weather prevented corn from earing out, and it is a light crop. Rowen and fall feed not up to the usual average. Less than the usual amount of fall seeding has been done as it has been too dry. Onions not an average crop. Potatoes a good crop both in yield and quality. There are plenty of apples on the hills.

Belchertown (H. C. West). — Indian corn about 85 per cent of an average crop; in many places a full crop, in others short. No rowen; fall feed improved by late rains, but still short. About the average amount of fall seeding has been done, but is late so that condition cannot be reported. Potatoes hardly up to an average yield; quality fine. Early planted roots promise well, late none; small crop of turnips. Apples uneven; fine in some cases, in others none; crop as a whole fairly good.

South Hadley (H. W. Gaylord). — Corn about half a crop; some have average crop while others are very near a total failure; much planted on light land expecting a wet season. Rowen very poor; the late rains have freshened up the grass crop wonderfully, and an average amount of fall feed is promised though late. Fall seeding done about September 1 is looking well; that done in July and August is being re-seeded. Onions not up to average. Potatoes a short crop. Beets and mangolds growing well; turnips a very poor catch. Apple crop heavy in some places, light in others.

Southampton (C. B. Lyman). — Corn about a three-fourths crop. Rowen the smallest crop for years; fall feed promising well. More than the usual amount of fall seeding done and looking well. Onions a fair crop though injured by drought. Potatoes about 80 per cent in yield; quality fine. Prospect for root crop fair. Apples about an average crop of fine quality.

Chesterfield (Horatio Bisbee). — Indian corn not more than a three-fourths crop. No rowen and but little fall feed as yet. But little fall seeding done, and the little not much started. Potatoes not up to an average crop; quality quite fair. Prospect for root crops not very good. Apples a fair crop. We need more rain and warm weather.

HAMPDEN COUNTY.

Blandford (E. W. Boise). — Corn nearly a full crop and sound but ears smaller than usual; stover a good growth. Rowen and fall feed almost a total failure. Hardly any fall seeding done, as excessive dryness of the soil prevented plowing. Potatoes about 85 per cent in quantity, A1 in quality. Recent rains have helped root crops and they are all growing fast. Apples now being gathered; full yield of good quality.

West Springfield (T. A. Rogers). — Indian corn is about three-fourths of a full crop. Rowen is 20 per cent of an average crop; fall feed improving and about three-fourths of the usual amount. An average amount of fall seeding done; drought prevented it from coming up, some pieces did not come at all, as a whole it looks bad. Onions a three-fourths crop; more than half blighted about August 1 when half grown. Potatoes about 60 per cent of a crop; quality first-class. Beets and mangolds fair; turnips about one-half; failed to come. Most orchards have borne well but apples have fallen off badly so that there will be one-half windfalls in many orchards.

Agawam (R. DeWitt). — Indian corn a little below average but good. Rowen and fall feed not up to the usual average. Less than the usual amount of fall seeding done on account of drought. Onions not an average crop because of lack of rain. Potatoes of good quality but far below the average yield. Seed in the ground from four to six weeks has come up since the rain.

Hampden (John N. Isham). — Corn about three-fourths of an average crop. No rowen unless on moist land; fall feed less than usual. Average amount of fall seeding done but starting slowly and very uneven. Very few fields of onions are average; many fields failures owing to drought and maggots; no scullions. Potatoes far below average in yield but quality very fine. But few good pieces of turnips; other roots fair crops. Apples little more than half a crop; no cranberries.

Brimfield (S. W. Brown). — Corn equal to an average crop. Next to no rowen and fall feed. The average amount of fall seeding has been done but is so dry that it does not show yet. Early potatoes average, late ones not. Prospect for root crops poor. Apples a poor crop. Much more fall seeding will be done now that the drought is broken.

Monson (A. H. White). — Indian corn very near an average crop. Rowen and fall feed very far from the usual standard. The average amount of fall seeding has been done but the ground was so dry that it has been slow in coming. Onions not an aver-

age crop owing to dry weather. Potatoes far below average in yield but of good quality. Prospect for root crops rather poor; turnips late, owing to being so very dry. Apples on high land good, on low land none, as frost at time of bloom killed them.

WORCESTER COUNTY.

North Brookfield (John H. Lane). — Indian corn is three-fourths of a full crop. Rowen and fall feed are about half the usual average. Were unable to plow for fall seeding until the rain of the 19th as our ground was as hard as possible and is but little better now. Some fields of potatoes fine and some not worth digging. Swedish turnips good; flat turnips nowhere. Cranberries a failure; apples half a crop.

Dana (E. A. Albee). — Corn about an average crop. Rowen about one-fourth of a crop, fall feed very short. A very small amount of fall seeding has been done as it was so dry that it was bad plowing and the seed would not come up. Potatoes about half a crop and of good quality. The prospect for root crops is good. Cranberries and apples short crops.

Templeton (Lucien Gove). — Corn is of good quality but the ears are rather small and not so well filled out as usual. Rowen and fall feed are the poorest for many years, rain came too late. It has been so dry until within the last two weeks that it was useless to seed. Potatoes not average in yield, quality good, crop very uneven some fields being good and others poor. Root crops not up to the average, drought affected the size. A surplus of fall apples; winter apples not more than half a crop.

Winchendon (W. H. Sawyer). — Indian corn is 75 per cent of an average crop. Rowen and fall feed all dried up and gone to the grasshoppers. The average amount of fall seeding has been done and is starting well since the rains. Potatoes a light crop of good quality. Prospect for root crops poor. Apples and cranberries average crops. Quite a number have tried crimson clover but have had poor luck with it so far.

Fitchburg (Dr. Jabez Fisher). — No rowen, fall feed fair. Potatoes about half a crop of fine quality, in moist lands nearly a full yield. My apples are nearly a full crop of fine quality with rather less color than usual, generally the crop is variable and not large.

Berlin (P. B. Southwick). — Indian corn about half a crop. Very little rowen cut; fall feed is looking better than formerly. Very little seeding has been done and that done needs rain to save it from failure. Onions 50 per cent of an average crop. Potatoes a three-fourths crop of extra quality. The prospect for root crops

is not very good. Apples an extra heavy crop; cranberries nearly a failure.

Worcester (S. A. Burgess). — Indian corn about 10 per cent above an average crop. Rowen and fall feed are very poor. The average amount of fall seeding has been done and is just coming up, being late owing to drought. Onions not an average crop owing to drought. Potatoes a fair yield but badly injured by scab. The prospect for root crops is fair if we have plenty of rain soon. Apple crop good, not yet gathered; cranberries a small crop.

Grafton (S. E. Stowe). — Corn is fully an average crop. Pasturage short and rowen not more than half a crop. Owing to dry weather but little fall seeding has been done, and shows but little growth. Onions are a light crop owing to the dry weather. Potatoes did well on moist land but were a failure on dry land. The root crop is growing nicely since the rain. Apples an average crop.

Upton (B. A. Jourdan). — Indian corn a very good crop. Rowen and fall feed not up to the usual average. The average amount of fall seeding has been done and is looking very well. Potatoes short in yield but of very good quality. Apple trees on high land are full and the fruit never looked finer.

Douglas (T. M. Potter). — Indian corn is very nearly an average crop. There is very little rowen and fall feed indeed. About the average amount of fall seeding has been done; condition good. Potatoes are an average crop in yield and quality. The prospect for root crops is poor. Apples a good crop.

MIDDLESEX COUNTY.

Groton (Daniel Needham). — Indian corn compares very well with an average crop. Rowen and fall feed not up to the usual average. Fall seeding has improved wonderfully during the past week, but the average amount has not been done. Potatoes are an average crop in yield and quality. The prospect for root crops is fairly good. Apples a very good crop. Rain and warm weather have marvellously helped fall feed. Those farmers who took the chances and did their seeding find the result excellent.

Littleton (Geo. W. Sanderson). — Corn an average crop. Rowen and fall feed not up to the usual average. Fall seeding is behindhand owing to the dry weather and the pressing demand for gathering the apple crop. Onions average in yield. Potatoes hardly a full crop. The prospect for root crops is very good. Apples an excellent crop; cranberries light.

Lowell (C. L. Marshall). — Corn under the average of last year. Rowen is very short; fall feed improving and very good. Less fall seeding than usual has been done, and it will be late and quite light. Onions not up to average owing to drought and rot. Late potatoes are a full crop and very good. Apples abundant; cranberries hardly enough to call a crop.

Concord (Wm. H. Hunt). — The corn crop in this section is not much below the average. Rowen is a small crop except on rich low land. Not quite as much fall seeding has been done as usual, and on account of dry weather it has not done well. The onion crop is small on account of dry weather. Potatoes are less than average in quantity, but of very good quality. There will be a fair crop of roots. Cranberry crop very small. The apple crop is large, but is uneven; some sections being overloaded, others being short. The apples are unusually fair.

Woburn (W. H. Bartlett). — Sweet corn mostly raised; has not eared well. Rowen and fall feed very short crops. The average amount of fall seeding has not been done as the severe drought prevented sowing. Onions almost a failure; too dry weather. Some fields of potatoes average; others on dry land not worth digging; quality extra. Root crops hardly average. Apples a good crop of extra quality; not many cranberries.

Newton (Otis Pettee). — Rowen and fall feed are very light. About the same amount of fall seeding as usual has been done, but many fields have not set well owing to drought. Potatoes an average crop in quantity; very little or no rot. Apples are plenty.

Marlborough (E. D. Howe). — Indian corn 90 per cent of an average crop. Rowen and fall feed very nearly up to the usual average. The usual amount of fall seeding has been done and is in good condition. Onions nearly if not quite an average crop. Early potatoes not an average crop; late ones good. Prospect for root crops good. Apples are excellent and a full crop.

ESSEX COUNTY.

Groveland (Abel Stickney). — Indian corn a full average crop. Rowen and fall feed not up to the usual average; rowen not more than 25 per cent. The average amount of fall seeding has not been done and the condition is not first-class. Onions a fair crop. Potatoes an average in yield and quality. Root crops are at present looking somewhat poorly. Apple crop more than ordinarily good; cranberry crop very small.

West Newbury (J. C. Tarleton). — Indian corn fully up to the average. Rowen and fall feed not up to the usual average; where

ground is in good condition the crop is fair. Not very much fall seeding has been done. Onions not an average crop on account of dry weather. Potatoes average crop in yield and quality. Root crops promise to be light. Apples more than an average; cranberries light.

Newbury (G. W. Adams). — Corn 90 per cent of a full crop. Rowen and fall feed are not more than one-fourth of an average. Very little if any fall seeding has been done. Onions about an average crop; no special drawbacks except drouth. Potatoes about 90 per cent of an average crop; quality good. Root crops fair to average. Strawberries poor; apples fair in places, but less than an average on the whole. No frosts yet of any consequence.

Ipswich (O. C. Smith). — Indian corn about 90 per cent of a full crop. Pastures are poor and rowen hardly half a crop. Not the usual amount of fall seeding has been done and dry weather has injured what has. Dry weather reduced the onion crop about 20 per cent. Potatoes nearly an average crop of the best quality. Root crops are good in spite of the drought. Cranberries estimated as half a crop; apples good in quantity and quality.

Topsfield (B. P. Pike). — Corn about 85 per cent of a full crop. Rowen and fall feed are both almost a failure. Not as much fall seeding as usual done; starting well now, but very late. Onions a very small crop, probably owing to drought. Potatoes an average crop of excellent quality. Turnips late, few other roots raised. Apples a full crop, cranberries almost a failure.

Danvers (C. H. Preston). — Indian corn is a good crop in most places. Rowen and fall feed are very poor. Fall seeding is in fair condition. Onions suffered from dry weather. Late potatoes did fairly well. Apples are a good crop of good quality.

NORFOLK COUNTY.

Medway (Monroe Morse). — Corn is 85 per cent of a full crop. Rowen a failure; fall feed has started well since the rains of the 20th inst. Fall seeding is about average and is looking well. Potatoes are 80 per cent in yield; quality extra. Apples a full crop; cranberries said to be light.

Millis (E. F. Richardson). — Indian corn is less than an average crop. Very little rowen or fall feed on account of drought. Not quite the average amount of fall seeding has been done, condition will be good with some more rain. Potatoes on low ground were a splendid crop, but taken all together were less than average; quality good. The prospect for root crops is poor. Apple crop large; very few cranberries.

Medfield (Geo. R. Chase). — Indian corn is three-fourths of an average crop. Rowen and fall feed are not more than 25 per cent of the average. Not the average amount of fall seeding done, and what has been done is backward. Potatoes not a full crop; quality 70 per cent. Prospect for root crops poor. Apples a full crop; cranberries a failure.

Cohasset (E. E. Ellms). — Indian corn is about three-fourths of a crop. Rowen and fall feed not up to the usual average. Less than the usual amount of fall seeding has been done. The onion crop is a full average. Potatoes are not an average crop. The prospect for root crops is not very good. Apples are plenty and cranberries scarce.

BRISTOL COUNTY.

Mansfield (Wm. C. Winter). — Indian corn 20 per cent below the average. The late rains are improving the pastures; no rowen. Not enough fall seeding done here to amount to anything. What onions are grown have not done well because of drought. Early potatoes almost a total failure; late planted about an average crop. Mangolds looking fairly well; turnips generally poor, owing to drought. Fall apples plenty; winter apples dropped badly, but will be a fair crop; cranberries below average.

Attleborough (Isaac Alger). — Indian corn about an average crop. Rowen and fall feed nearly up to the usual average. The average amount of fall seeding has been done and it is in fair condition. Potatoes are less than an average crop, but the quality is good. The prospect for root crops is good. Cranberries a one-fourth crop; apples a two-thirds crop.

Raynham (N. W. Shaw). — Corn not half a crop. There is but little rowen or fall feed. About the usual amount of fall seeding has been done, but it is not as early as usual and has not grown much. Potatoes a small crop of good quality. The prospect for root crops is not very good. Apples are very plenty and very good, but the cranberry crop is small.

Somerset (Joseph Gibbs). — Indian corn a three-fourths crop. Rowen not 10 per cent of a full crop. The average amount of fall seeding has been done, but the condition is not promising. Onions 40 per cent of a full crop; injured by the drought. Potatoes half a crop of good quality. The prospect for root crops is poor. Apples a fine crop; no cranberries. Crops of all kinds are short, and prices unusually low.

Westport (A. S. Sherman). — Corn very good; better than an average. Rowen and fall feed not up to the usual average. It has been so dry that but little seeding has been done, and what

there is is very backward. Onions a small crop, owing to dry weather. The potato crop is very good. Turnips are growing nicely now, but it has been so dry that they are small and will not have time to grow larger. Apples plenty and very good; cranberries are scarce.

Fairhaven (F. C. Lyon). — Corn compares favorably with an average crop. There will be no rowen cut; pasturage below average. The average amount of fall seeding has been done; very little grass in sight, needs more rain. On the whole the potato crop is one-third less than average, but of splendid quality. The apple crop is good; many farmers are picking and the crop is thought to be two or three weeks early. Pasturage is so short it has cut the milk supply off nearly half. Cows are fed at the barn.

PLYMOUTH COUNTY.

Hingham (Aaron Low). — Corn less than an average crop. Rowen and fall feed not up to the usual average. The weather has been too dry and but little fall seeding has been done. The onion crop is fair. Potatoes a small yield of good quality. The prospect for root crops is very poor. Apples are good; cranberries a very small crop.

Brockton (Davis Copeland). — Indian corn is a fair crop. Rowen and fall feed are not up to the usual average. The average amount of fall seeding has been done, but it is late about starting. Onions not an average crop, owing to hot, dry weather early in the spring, maggots, blight and drought. Potatoes an average crop of good quality. The prospect for root crops is rather poor as it is too dry. Apples good; cranberries a one-fourth crop or less.

Hanson (F. S. Thomas, M.D.). — Indian corn three-fourths of an average crop. Rowen and fall feed not up to the usual average. Fully the usual amount of fall seeding has been done and the condition is good. Potatoes not an average crop. Prospect for root crops fair. Apples good; cranberries poor.

Marshfield (J. H. Bourne). — Indian corn is not an average crop. Rowen and fall feed are not up to the usual condition. The average amount of fall seeding has not been done and is very small, having only just started. Onions nearly an average crop, drought and maggots the drawbacks. Potatoes about half a crop of excellent quality. The prospect for root crops is poor. Apples are more than an average crop; cranberries less than half a crop. The season has been very unfavorable for vegetation.

Kingston (J. H. Cushman). — Corn is about two-thirds of an average crop. Rowen and fall feed are a full average. Very little

fall seeding has been done as yet. Onions a very good crop, but many small ones. Late potatoes are an average crop, some rot on low ground. Root crops are small on account of dry weather. There is a great yield of apples; cranberries about half a crop, though they are excellent except on bogs caught by the late frosts in the spring.

Middleborough (Elbridge Cushman). — Indian corn about a three-fourths crop. Rowen and fall feed are not up to the usual average. Less than the average amount of fall seeding has been done, and it is backward on account of drought. Onions not an average crop, owing to dry weather. Potatoes not up to the usual yield, but of extra quality. The prospect for root crops is fair. Apples are very good; cranberries a failure.

BARNSTABLE COUNTY.

Mashpee (W. F. Hammond). — There is about an average crop of Indian corn. Rowen was a failure; fall feed below the average. The average amount of fall seeding has not been done. The onion crop is below the average owing to drought. There is about half a crop of potatoes of good quality. Root crops are looking quite good. Apples are about an average crop; cranberries a one-fifth crop.

Sandwich (J. R. Holway). — Indian corn about 40 per cent of a full crop. Rowen and fall feed are both very short. The average amount of fall seeding has been done; about all during the last two weeks. Onion crop below average owing to dry weather. Potatoes a very small crop of good quality. Apples are a good crop, but cranberries are short; many bogs in this section not being worth picking.

Barnstable (John Bursley). — Indian corn below an average crop. Rowen and fall feed are far below the usual standard on account of drought. Considerable seeding has been done, but so recently that its condition cannot be judged. Onions nearly a failure owing to the drought. Potatoes a small yield of good quality. The prospect for root crops is poor. The apple crop is small, and cranberries are estimated at one-third the usual crop.

Dennis (Joshua Crowell). — Corn much below the average. Feed below the average, and no rowen except on low land. Scarcely any fall seeding has been done. The onion crop is much reduced by dry weather. Potatoes are about half a crop. Root crops will be small unless we have a remarkably good fall. Apples above average crop; cranberry crop not more than 20 per cent of that of last year. The rain of the 19th and 20th improved the grass, but more rain is needed both by fall feed and by the mowing lands.

Eastham (J. A. Clark). — There is very little corn planted, but what there is looks well. Rowen will be light, but fall feed has improved since the rain. Very little fall seeding has been done. Potatoes are a light crop of good quality. Root crops were planted late, but are doing well now. Apples on some trees are extra good; others light; crop better than average. Cranberries a light crop.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Indian corn about two-thirds of an average crop. No rowen; fall feed much below average. We do but little fall seeding; the chances are good for what has been done. Potatoes are below average in yield, very good quality. Prospect for root crops fair. Apples good; cranberries light.

NANTUCKET COUNTY.

Nantucket (Chas. W. Gardner). — Indian corn is two-thirds of an average crop. No rowen or fall feed at all. There has been no fall seeding on account of the dry weather. Onions about half a crop owing to drought. Potatoes are about half the usual yield. The prospect for root crops is fair in some places.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

ORNITHOLOGICAL.

The Regulative Influence Exerted by Birds on the Increase of Insect Pests.

It is only by a comprehensive knowledge of the numbers, reproductive capacity and insatiable voracity of insects, and a searching inquiry into the food habits of birds during all seasons and at all periods of their existence, that we are enabled to appreciate the economic relations which insect-eating birds assume toward the tiller of the soil.

The number of species of insects on the globe is vast, and that of the individuals of each species is beyond comprehension. The number of species is greater by far than that of all other living creatures combined. More than three hundred thousand have already been described. There are many thousands of undescribed species in museums. Dr. Lintner, the distinguished entomologist of the Empire State, considers it not improbable that there are a million species of insects. Each one of these species is enormously productive, and it is undoubtedly true that were the progeny of one pair of insects allowed to reproduce without check, the species would soon cover the entire habitable earth.

The Rocky Mountain locust in its flights fills the air and hides the sun. From the high peaks of the Sierra Nevada it has been seen filling the valleys below and the air above as far as a powerful field glass could bring the insects within its focus. The chinch bug covers the corn and grain fields in countless millions over towns, counties and States. The army worm moves at times in solid columns, destroying the crops in its path. The voracity of insects is almost beyond belief. Says Dr. Lintner: "A certain flesh-feeding larva will consume in twenty-four hours two hundred times its original weight. . . . There are vegetable feeders, caterpillars, which during their progress to maturity, within thirty days,

increase in size ten thousand times. To reach this remarkable growth a man at his maturity would have to weigh forty tons."*

In view of such facts it will be seen that insects, by reason of their enormous multiplication and great voracity, may become more dangerous to crops if unchecked than larger and more powerful animals.

It may be truthfully said that this country suffers far more from the depredations of insects than any other; and this is to be expected, in view of the methods employed in agriculture, and the conditions under which it is here conducted.

A considerable proportion of the fertile land in America is still uncultivated, and there are vast tracts in which insects can breed unmolested until they exhaust their feeding grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country man at once begins to disturb the long-established relations between living organisms. In a wooded country the forests are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas are devoted to special crops, like the great grain farms of the north-west, the orange groves and vineyards of California, and the great orchards and potato fields of other States. These tracts offer great quantities of desirable food and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever-increasing traffic on newly constructed highways and railways, and as these imported insects escape most of their natural enemies by being brought to this country, and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes take advantage of the introduction of a new and succulent food plant and follow it back from the frontier into the agricultural regions, spreading over the whole country and causing wide-spread injury to a staple crop, as did the Colorado potato beetle. As the land becomes settled and the ravages of insects increase, the settlers, instead of endeavor-

* Annual Report New Jersey State Board of Agriculture, 1888, p. 295, "Our Insect Enemies," by J. A. Lintner, Ph.D., N. Y. State Entomologist.

ing to protect and foster the useful birds that were designed by the Almighty to dispose of the surplus insect production, pursue them with the gun and poison until the larger useful species are nearly if not quite extinct. The wild turkey, grouse, the prairie chickens, the wild pigeons, ducks and geese, the plovers, woodpeckers, blackbirds, larks, robins and all birds which are "good for food" are slaughtered relentlessly, even at the season when the callow young must perish from starvation if deprived of parental care. The grasshopper-eating buzzards and all hawks and owls are shot at sight anywhere and everywhere by all classes of people. Many States offer bounties on the heads of supposed noxious birds without being aware that such a policy is undermining the agricultural interests. Small birds are hunted for their feathers; "birds egging" boys increase apace; a million cats forage the fields and woods; fashion calls for millions of birds to deck the ladies' garments, and the number of girls requiring such decorations yearly increases. In the meantime insects increase and run riot. The locust, the chinch bug, the army worm, the codling moth, the plum curculio, the cabbage butterfly, the boll worm, the asparagus beetle, the canker worms, bugs, beetles, aphids, borers, grasshoppers and other insects galore destroy the ripening grain, sap the lusty fruit tree, devour its leaves, despoil the garden, field and forest and render the life of the successful farmer one continual battle with his insect foes. During the locust invasions in the west hundreds of small farmers lost their all, and becoming destitute, were forced to leave all they possessed and remove to more favored lands.

In 1854 the loss occasioned in New York State by the wheat midge (*Diplosis tritici*, Kirby) was in excess of fifteen million dollars. (Estimate given by Dr. Fitch, State Entomologist.) The value of wheat and corn destroyed in Illinois in 1864 by the chinch bug (*Blissus leucopterus*, Say) is estimated at seventy-three million dollars. (First Annual Report of Injurious and Other Insects of New York State, by Dr. J. A. Lintner, Albany, 1882, p. 71.) The loss in the four States of Kansas, Nebraska, Iowa and Missouri during 1874 from the ravages of the Rocky Mountain locust is estimated at one hundred million dollars (First Report U. S. Entomological Commission, 1877, p. 121); while the annual loss caused by insects in this country is said to be from three to four millions. (Report U. S. Department of Agriculture, 1884, p. 324.) What wonder then that the farmer is taking desperate means to protect his crops? What wonder that deadly poisons disguised as insecticides are scattered by the ton over the foliage of many of our most important food crops, and that the experiment stations are continually searching for means to quell the annual or period-

ical raids of insect pests? And yet, strange as it may seem, the most distinctly visible and noticeable of all the influences provided by nature to prevent or control this insect surplus is almost wholly ignored or unappreciated by the people whom it seems especially designed to benefit. The land birds that are, by their structure, by their habits and preferences, especially adapted and designed to consume great quantities of insects, are not encouraged, fostered or protected, but are pursued and slaughtered without mercy. Many of them are regarded as nuisances and pests and their services to agriculture are either entirely ignored or strenuously denied.

Now let us look at this question of the utility of insect-feeding birds in the light of reason. There are absolutely no other creatures upon this earth that are as well fitted for searching out and destroying most kinds of insects in all places and at all seasons, over wide areas, as are the land birds, and especially the smaller species. Wherever they are sufficiently numerous they will exert a strong influence for the suppression of any undue multiplication of insects. The very minute insects are all that are likely to escape them.

A few of the reasons why birds are useful in checking insect invasions are obvious.

1. Birds by their powers of flight and telescopic vision are admirably adapted to search for and find food over large areas, and for a sudden and swift pursuit of it and an unerring descent upon it when found.

2. The young of most land birds require a great quantity of insect food for their perfect development and are, therefore, raised at a season when insects are most abundant.

3. During this season the parent birds go to those points where insects are numerous that they may easily secure a sufficient supply for their young.

Hence birds gather in numbers wherever great insect outbreaks occur, and not only destroy many insects themselves but feed still more to their young. This gathering continues from season to season until the noxious insect is so reduced in numbers that it is lost to common observation.

4. The full-fledged birds are to a certain extent omnivorous and are thus able to subsist when insect food is difficult to obtain. In winter certain birds are quick to find those localities where the eggs of insects are plentiful.

It is at once seen how well certain families of birds are fitted for the pursuit and capture of certain families of insects. The thrushes dragging unwilling cut worms and grubs from the ground;

the ground sparrows gleaning among the leaves and undergrowth for ground beetles ; the woodpecker drilling into the trees for borers ; the creepers, nut-hatches and titmice searching every crevice and cranny in the bark of the trees, extracting the hidden grubs, eggs and caterpillars ; the warblers, vireos and wrens searching the twigs and foliage of plants and trees for the wary insects hidden there ; fly catchers, bluebirds, swallows, warblers and swifts cleaving the air in all directions and snapping up their flying or perching prey ; the hawks and bitterns destroying grasshoppers ; the owls, night hawks and whippoorwills noiselessly flitting about pursuing the large night-flying moths and beetles, — all give evidence of perfect adaptation to the pursuit and capture of the insects on which they feed.

Birds of many species follow locust invasions and gorge themselves to repletion. It is a well-known fact that birds assemble wherever the larvæ of moths appearing in great numbers strip the foliage from the trees. Birds quickly discover such localities and at once resort to them, seeking them as magazines of food supply for their young. I have observed blackbirds flying half a mile over the meadows to a spot where larvæ were plentiful, returning after each visit with caterpillars in their beaks to feed their young. They seem to prefer to travel this distance to a point where food is plenty and easily obtained rather than to search for it in the immediate vicinity of their nests. An orchard infested by canker worms is visited by birds from far and near, and the outbreak is generally checked in one or two seasons if birds are sufficiently plentiful in the neighborhood. The amount of insect food which young birds will consume is not generally understood. Mr. E. W. Wood of Newton, a well-known member of the State Board of Agriculture, informs me that during one season, when the spring canker worms (*Anisopteryx vernata*) became quite numerous in his orchard, a pair of Baltimore orioles appeared and built a nest near by. In the mean time they fed daily upon the canker worms. This they continued to do so assiduously that by the time the young were hatched the numbers of the worms were considerably reduced. They then redoubled their diligence, sometimes carrying ten or more worms to their nest at once. Soon the canker worms in that orchard were a thing of the past. The foliage and fruitage were saved for that and many succeeding years. Audubon says a woodcock will eat its own weight of insects in a single night. Mr. E. A. Samuels, quoting from the experiments of Professor Treadwell, shows that it was found necessary to feed a young robin forty-one per cent more than its own weight in worms in twelve hours to insure its healthy growth and development. It was found that the

bird would consume nearly half of its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Should a pair of robins have four half-fledged young to provide for, each parent would be obliged to secure a worm or its equivalent each five minutes for at least ten hours each day to supply the young with needful food. Wilson Flagg, an acute observer of birds, found by experiment that young robins required only insect food and remained healthy and vigorous on that alone. What is true of the young of a robin is undoubtedly true of the young of many other birds. Dr. Brewer says that a pair of jays feed their young five hundred thousand caterpillars in a season. Any one who will watch robins, wrens, cuckoos, jays, woodpeckers and other birds while they are feeding their young will become convinced that the number of insects destroyed by birds is beyond calculation. Many birds eat the eggs of insects. Dr. Brewer says a pair of jays will destroy a million eggs each winter and a titmouse or chickadee destroys many more during an entire year.

Injurious Habits of Birds.

Certain birds are injurious to agriculture directly by the destruction of fruit buds, blossoms, seeds, grains, young plants and vegetables, poultry or doves; indirectly by the destruction of beneficial insects and birds and by the distribution of noxious seeds. I recall but one native bird which has a habit of destroying the buds and blossoms of fruit trees, viz., the purple finch or red linnet.

There are several species — the robin, oriole, cat bird, cedar bird, and a few others — that feed to a considerable extent on small fruits in their season. But it must not be forgotten that during the fruit seasons a large portion of their food consists of insects, and that during that time they are engaged in feeding their young almost entirely on insects. At times doves, pigeons, crows, jays, blackbirds, reed birds and quails subsist to a great extent on grain. Robins, crows and some other birds undoubtedly distribute seeds of poisonous plants which pass through their alimentary canal undigested and in some cases germinate. Crows, jays and cuckoos destroy the eggs and the young of other birds. Corn is frequently mentioned in connection with crows, jays and blackbirds. A few species of hawks and owls kill many insect-eating birds and some poultry. The "English sparrow" is the only bird that has been justly accused of all the crimes in the calendar of which a bird is capable, and is the only bird in this Commonwealth that is at all seasons an enemy to the farmer.

This sparrow should be shot or trapped upon all possible occasions and its eggs and young destroyed whenever found. But the utmost care should be taken not to confound this species with our native sparrows, which are highly beneficial. Farmers will be obliged to protect their grain, fruit or poultry at times from the attacks of birds. This should be done as far as possible by using means to drive away the intruders rather than to kill them.

There is no doubt that the robin and the "cherry bird" pay a higher price to the farmer for his fruit than he can get in the open market, or that the owls render services far more valuable to the farmer than the few chickens they consume. Specialists, such as poultry-men or small fruit-growers, may suffer unduly at times, but they are generally fully capable of protecting their own interests.

The general farmer will do well to offer all possible protection to birds, for in so doing he will materially benefit his own fortunes.

E. H. Forbush,
Ornithologist.

SERIES OF 1894. BULLETIN No. 6.

MASSACHUSETTS

CROP REPORT

FOR THE

MONTH OF OCTOBER, 1894.

ISSUED BY

WM. R. SESSIONS,

SECRETARY STATE BOARD OF AGRICULTURE.

BOSTON:
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1894.

Crop Report for the Month of October, 1894.

Office State Board of Agriculture,
Boston, Mass., Nov. 1, 1894.

Bulletin No. 6, Crop Report for the month of October, is herewith presented as the final issue of this season. Our sincere thanks are extended to correspondents and others who have helped us from month to month. If nothing unforeseen happens, the work will be resumed next spring. The special articles printed this season have been as follows: Bulletin No. 1, "Report on farm animals," "Communication to fruit growers, dealers and consumers;" Bulletin No. 2, "Tuberculosis and its eradication;" Bulletin No. 3, "The diagnosis and eradication of tuberculosis;" Bulletin No. 4, "Retrospect and prospect of the fruit crop of 1894," "Statistics of Massachusetts agriculture;" Bulletin No. 5, "The regulative influence exerted by birds on the increase of insect pests;" Bulletin No. 6, "Household insects."

Progress of the Season.

In Report No. 120 (October, 1894) the Statistician of the United States Department of Agriculture gives the October condition of corn as 64.2, against 63.4 in September. In most of the Southern States the condition has fallen, but in some of the Western States there have been slight gains in condition.

The returns of yield per acre of wheat indicate a production of about 13.1 bushels, being 1.8 bushels greater than last year's preliminary estimate. The indicated quality for the country is 93.5.

The average yield of oats was 24.5 bushels, against 23.5 in 1893 and 24.3 in 1892. The returns in States having over 1,000,000 acres each ranged from 17.9 bushels in Kansas to 32.3 in Indiana. In the same States the quality ranged from 70 in Nebraska to 98 in Iowa, the general average for the whole country being 90.5.

The average yield of rye was 13.7 bushels, against 13.3 in 1893 and 12.7 in 1892. The average condition when harvested was 86.9, and the general average for quality, 94.3. The yields per acre in the States of largest acreage ranged from 5.8 bushels in Kansas to 18.6 in Illinois.

The correspondents' returns on yield of barley per acre put the general average at 19.3, against 21.7 in 1893 and 23.7 in 1892. Wisconsin had the largest yield, 28.6 bushels, and California the highest percentage on quality, 94; the general average of the whole country for quality being 90.2.

A gain of 2 points in the condition of buckwheat places the general average at 72. The condition last year was 73.5, and in 1892 85.6.

The condition of potatoes has slightly improved in the last month, standing now at 64.3, as against 62.4 on September 1. The October condition has been lower in but two years, viz., in 1887 and 1890, when it stood at 61.5 and 61.7 respectively. Last year the October condition was 71.2.

The condition of sweet potatoes in States of commercial production is generally high, and very general gains, due to timely rainfall, are noted.

The general average condition of tobacco has advanced from 74.5 on September 1 to 84.5 on October 1, a clear gain of 10 points.

The average condition of rice on October 1 was 89.8, or .4 of 1 per cent higher than that for the previous month.

The condition of sorghum is generally higher than at the time of the last report. A fine crop is indicated in nearly all the Southern States.

The important States in the growth of sugar cane continue to report high percentages, ranging from 89 in Georgia to 101 in Louisiana.

Cotton shows a falling off of 3.2 points from the September condition, which was 85.9, against 82.7 for the present month. For the most part the decline in condition is due to continued rains that began about the middle of August and extended into September. Much shedding, rot and rust are reported, and no little loss from insect ravages.

The general average yield per acre is estimated at 34.7 bales.

In Massachusetts the average yield per acre of rye is given as 19.2 bushels, the average yield of oats as 31.9 bushels, the average yield of barley as 21.7 bushels, the average condition of buckwheat October 1 as 90, the average condition of corn as 78, the average condition of potatoes as 73 and the average condition of tobacco as 90.

Temperature and Rainfall for the Whole Country.

From United States Weather-Crop Bulletin.

Week ending October 1. — Slightly cooler than usual in the States of the lower Mississippi valley, on the south Atlantic coast and in New England. Cooler than usual on the Pacific coast and over central and northern plateau regions. From Texas and New Mexico northward to the upper Missouri valley, westward to the north Pacific coast and thence eastward to the lower lakes and upper Ohio valley, the week was warmer than usual. More than the average amount of rain fell during the week from the upper Missouri valley westward to the north Pacific coast and thence southward over California; also heavy local rainfall in south-central Kansas. The rainfall accompanying the tropical hurricane of 25th–29th was very heavy along the south Atlantic coast from Virginia southward; elsewhere the week was dry and almost without rainfall. Week very favorable for securing crops and for fall seeding, which is generally nearing completion. Winter wheat and pasturage are also in excellent condition generally. Cotton picking has in most sections progressed rapidly. Frosts occurred as far south as Kentucky, but no serious injury has been reported.

New England Weather and Crops.

From United States Weather-Crop Bulletin.

Week ending October 1. — Late crops of grass and grain growing fast, stock in pastures gaining; but much more rain is necessary to fill ground and reservoirs for winter. Harvesting mostly done, and most crops secured in prime condition, of extra quality and good quantity.

Massachusetts Weather, 1894.

[Compiled from data furnished by the New England Weather Service.]

January was warm and dry. The highest temperature was on the 24th and 25th, varying from 47° to 57°; and the lowest was on the 13th and 29th, when it was from 8° above zero on the coast to 9° below zero in the interior counties. The precipitation was generally deficient. Most of the snow fell on the 27th and 30th. During the greater part of the month the ground was mostly bare.

February was very cold, and decidedly the "winter month" of the year. The precipitation was more than usual along the coast and deficient in the interior, and was mostly in the form of snow. The highest temperature occurred in most places on the 18th, and was from 42° to 54°. The coldest day of the month, and in many places the coldest for years, was the 24th. The temperature ranged from 5° to 12° above zero along the coast, while in the western part of the State it did not rise above 4° to 11° below zero. On the 17th and 18th there was a change of 71° within thirty-six hours.

March was very warm and very dry. The excess of temperature averaged over 8° a day at Boston, Cambridge, Somerset, Fitchburg and Springfield. At a few stations along the coast the highest temperature was on the 6th, but generally it was on the 19th, and varied from 60° to 74°. The coldest spell was on the 27th and 28th, when the temperature fell from 8° to 20° below freezing. It was the dryest March on record in the history of the Weather Bureau at Boston. The snowfall was small and the ground was bare the most of the month.

April was warm and dry in all interior sections, and cool and wet along the south-eastern coast. The warmest day was generally on the 27th, the temperature rising to from 72° to 82°. The lowest was everywhere on the 3d, when it fell to from 5° to 20° below freezing. Snow fell on the 9th, 11th and 12th. High gales prevailed, and with the damp, heavy snow did great damage to telegraph and telephone service.

May as a whole was favorable for cultivation and growth of crops. Beginning on the 18th, the drought was effectually broken by rain, and for the rest of the month mostly cloudy, cool weather prevailed, with frequent rains. Quite a good deal of damage was done in eastern sections by high winds, and in all sections by frosts which occurred on the 11th, 12th, 15th, 16th, 17th and 22d. Hail fell at Dudley on the 4th. Winds mostly south-west. Thunder-storms occurred on the 2d, 4th, 7th, 18th, 19th and 28th.

During June in most of the western counties frequent and generally sufficient showers occurred. But little rain fell in the eastern part of the State. The highest temperature reported was 103°, at Lowell on the 17th. Light frosts occurred on the morning of the 14th in the south-east. The prevailing wind was south-west. Drought conditions were reported in places. Hail fell at Hyannis on the 4th. Thunder-storms occurred on the 4th, 7th, 11th, 21st, 23d and 30th.

July weather on the whole was favorable for harvesting hay and grain; but the heat on some of the last days of the month was intense, and there was a general lack of precipitation in all eastern sections, giving one of the most serious and long-continued droughts on record. At many of the interior towns reliable thermometers registered over 100° on the 20th. In the western part of the State the rainfall was generally sufficient for vegetation. The prevailing wind was south-west. Thunder-storms occurred on the 1st, 3d, 5th, 10th, 14th, 15th, 16th, 17th, 18th, 21st, 25th, 29th and 31st. Hail was reported at Worcester the 25th and at Fitchburg the 29th.

August weather was cool. There were few rainy and cloudy days, and an unusual lack of rainfall. The drought was reported as serious in all sections of the State. A frost on the 22d was general throughout the State. Hail was reported at Concord on the 19th. The prevailing wind was south-west. Thunder-storms were reported on the 3d, 9th, 15th, 19th and 20th.

September weather was generally favorable for ripening and harvesting crops. The weather was warmer than usual,

the warmest spells being on the 9th–11th, and the coldest on the 26th–27th. On the last-named dates were killing frosts on all low lands. The prevailing wind was southwest. Thunder-storms occurred on the 10th, 15th, 16th, 17th. A heavy thunder and wind storm passed easterly across the northern part of the State on the 10th. A storm on the 30th whipped off many apples along the coast.

Meteorological Data for October, 1894.

STATION.	TEMPERATURE. DEG. F.					PRECIPITATION.		Prevailing Wind.	CLOUDINESS. NO. OF DAYS.		
	Mean.	Maximum.	Date.	Minimum.	Date.	Total in Inches.	Days with Precipitation.		Cloudy.	Partly Cloudy.	Clear.
Monroe,	45.6	71	20	28	16	4.50	12	–	13	7	11
Pittsfield,	49.2	70	20	32	16	3.64	10	–	–	–	–
Springfield,	52.8	70	20	34	16	4.98	10	E.	–	–	–
Amherst,	50.3	73	20	29	19	4.40	11	N.W.	9	10	12
Fitchburg,	49.4	73	20	33	15	4.44	11	W.	12	5	14
Worcester,	51.9	74	20	35	15	3.96	9	N.	11	9	11
Framingh'm,	51.3	76	20	28	19	5.20	10	–	–	–	–
Bedford,	50.9	75	20	31	19	3.96	10	N.E	14	8	9
Lowell,	53.6	80	20	33	16	3.46	7	S E.	11	15	5
Boston,	54 0	76	20	38	16	5.11	10	W.	14	9	8
Taunton,	52.8	77	20	29	19	8.88	11	N.E.	10	9	12
New Bedf'd,	53.5	73	4	33	19	7.63	12	W.	6	11	14
Provincet'n,	53.7	73	4	37	19	5.69	11	W.	11	9	11

Summary.

Temperature (F.). — Monthly mean, 51.5°; highest monthly mean, 54.0°, at Boston; lowest monthly mean, 45.6°, at Monroe; maximum, 80°, at Lowell on the 20th; minimum, 28°, at Monroe on the 16th and at Framingham on the 19th; range, 52°; greatest local monthly range, 48°, at Framingham and Taunton; least local monthly range, 36°, at Provincetown and Springfield; greatest daily range, 37°, at Framingham on the 8th and at Lowell on the 19th; least daily range, 2°, at Provincetown on the 30th. At Springfield the mean temperature averaged 1.8° above the normal; at Fitchburg it was 1.5° above, and at Boston 2.5° above.

Precipitation. — Average, 5.07 inches; greatest amount, 8.88, at Taunton; least, 3.46, at Lowell. The excess in precipitation at Springfield was 0.81 inches, and at Boston 0.83 inches.

Prevailing Wind. — West.

Thunder-storm. — 13th.

Solar Halo. — 16th.

Lunar Halos. — 9th, 15th.

Remarks.

The weather for the month was warmer than usual with a marked excess of precipitation in the south-eastern districts and a slight excess in central and western. The 20th was the warmest day at most places in the State, the maximum being higher than is usual so late in the season. Light frosts have been general, and killing frosts have occurred on all low lands, but in most of the upland or protected districts, hardy garden plants and late vegetables are still growing, untouched by frosts. The rainfall has been abundant in all sections for growth of grass and grain seeds and for ploughing and seeding; but except in the extreme south-east there has not been enough to fill up wells and springs to any extent. The first snow of the season fell on the evening of the 14th, in the Berkshire hills, in the north-eastern part of the State. Enough came on this date and also on the 17th to whiten the ground, but it soon melted. The thunder-storm on the evening of the 13th was quite severe in south-eastern districts. The high school building at Sandwich was struck by lightning and considerably damaged. The cupola was entirely wrecked and nearly every pane of glass in the building was broken. At Taunton the storm was accompanied by very heavy rain, 1.75 inches falling in three-fourths of an hour. The streets were flooded in places to the depth of eight inches. There has been about the normal amount of sunshine, and on the whole the weather has been very favorable for the ripening of late crops and for fall work on the farm.

Crops of the Year.

The season opened from ten days to two weeks earlier than usual; but the dry weather of April and the first half of May, and the cold storms and frosts following, made conditions about average on June 1. Stock wintered well. Promise of good crop of hay on newly seeded and moist lands, and for a light to fair crop on old and dry fields. Fall seeding wintered well. The apple bloom was unusually heavy, the peach bloom light, and the bloom of other fruit trees and small fruits a good average. Canker and cut worms unusually numerous; tent caterpillars not plenty. Farm help more plenty than of late years. Wages ranged from $8 to $28 per month and board, according to locality and character of help; per day the range was $1 to $2, with $1.50 as the average. The general industrial depression as yet had had no material influence on the acreage of crops.

July 1 the potato beetle appeared to be the only insect generally prevalent. Indian corn was looking well, though backward, and a slight increase in acreage was reported. Haying was just commencing. Early potatoes reported as looking well, with promise of a good crop; a considerable increase in acreage was noted. Early market-garden crops were generally a fair yield, with prices somewhat lower than usual. Dairy products were average in quantity, with slight but general decrease in prices received. Pastures reported as "dry," "short" or "badly in need of rain." The outlook for fruits and berries was fair. Strawberries were a fair crop, currants a good crop and cherries abundant; blackberries and raspberries promised well.

August 1 the potato beetle and the horn fly were most frequently mentioned as prevalent and troublesome. A good crop of Indian corn promised. Hay crop harvested generally in excellent condition, and quality as a rule very good. Yield estimated as three-fourths of an average crop. Fodder corn reported as the forage crop most universally grown. Market-garden crops below average in quantity, with prices low. Early potatoes light yield and quite small, but of good quality; prices low. Apples and pears generally promised well; grapes fair to good; few peaches promised; cran-

berries promised a light crop. Pastures "very short," "crisp," "dry" and "badly burned." Rye a good average crop. Oats injured by dry weather, and considerably rusty.

September 1 Indian corn promised about a three-fourths crop. The drought badly injured potatoes. Tobacco a very fair crop, of good color and quality. Apples and pears very uneven; very few peaches; grapes a fair crop; cranberries light. Pasturage in all sections very poor. Oats and barley suffered considerably from drought, and fell short of average crops.

October 1 Indian corn about a three-fourths crop; rowen almost a total failure. Fall feed considerably improved, but still far from average condition. Less than usual amount of fall seeding done, owing to dry weather. Onions as a rule a light crop, owing to drought. Potatoes generally considerably less than an average crop, but of good quality. Root crops promised to be only fair; turnips particularly poor. Apple crop very uneven; apples generally of large size and fine color. Cranberries not over half a crop.

In the circular to correspondents returnable to this office October 30 the following questions were asked : —

1. Have root crops proved average crops?
2. What is the condition of farm stock?
3. What is the condition of fall seeding?
4. How have prices for apples compared with former years, and do you consider the crop a profitable one?
5. Which of the leading crops in your locality do you think have been most profitable?
6. Which of the leading crops in your locality do you think have been least profitable?
7. Considered as a whole, has the season been a profitable one for your farmers?

Returns were received from 108 correspondents, from which the following summary has been made : —

Root Crops.

Root crops are probably somewhat below the average throughout the State, as fifty-three correspondents report them as less than average and only forty-four speak of them as average or above. The complaints are about equally divided between western, central and south-eastern portions of the State. In Middlesex and Essex counties the condition is universally spoken of as good. Considerable complaint is made of the condition of turnips, a number of correspondents speaking of them as poor while other roots are good crops.

Farm Stock.

Farm stock is in from fair to good condition. The majority of correspondents speak of it as good and the remainder as fair or rather thin in flesh, but otherwise good. Only one correspondent speaks of the condition as poor. Much of this good condition is doubtless due to stock having been fed at the barn during the summer. Several correspondents speak of this fact, and a few speak of stock which has been turned out to pasture as very thin. The mild fall and warm rains have favored fall feed and pastures are now looking well, so that stock should continue to improve in condition for the remainder of the season.

Fall Seeding.

Fall seeding can hardly be said to be in good condition and is probably, if anything, a little below average. The condition a month ago was poor but the rains of the past month have improved it materially. A number of correspondents speak of it as late but looking well, while a few consider the condition poor. Others speak of it as fair or not quite up to average, while fully half the correspondents speak of the condition as good.

Apples.

Prices for apples may be considered as nearly average if not quite so. The majority of correspondents speak of them as average, a few as above average, and a slightly larger number as below. Prices quoted range from $1 to $1.50 per barrel; probably $1.25 would be a fair average of the prices given. About two-thirds of the correspondents consider the crop a profitable one, while the other one-third looks upon it as unprofitable. Among the reasons given for lack of profit are the high cost and scarcity of barrels, the high price of labor and land, poor methods of orcharding, and the unusually large crop.

Most Profitable Crops.

The opinions of correspondents as to the most profitable crops vary widely. Some state that they cannot tell, as sales are not yet completed, while one says that there have been no profitable crops this year. Thirty-eight consider hay to have been among the most profitable crops; thirty-three, potatoes; twenty-four, corn; eighteen, apples; four, tobacco; three, cabbage; three, fruit; two, rye; two, oats; two, barley; two, cranberries; two, peas; two, asparagus; and one, dairy products.

Least Profitable Crops.

Twenty-seven correspondents state that potatoes were among the least profitable crops; eighteen, corn; eight, hay; seven, oats; six, onions; five, apples; four, roots; four, cabbage; three, milk; three, market-garden crops;

two, tobacco; two, rye; two, strawberries; one, peas; one, fruits; one, barley; one, pears; one, wheat; one, cranberries; and one, beans.

Profits of the Season.

The season is quite generally considered to have been a poor one for the farmer. None speak of it as unusually profitable, while the great majority consider it either unprofitable or only fairly so. The unfavorable condition is largely due to the drought of summer and early fall, which shortened nearly all crops, and in some sections reduced them nearly to a minimum. There is also much complaint of slow sales and low prices. One correspondent attributes this to so many men being out of work, thus shortening the local markets. Others mention the fact without attempting to account for it. Several speak of wool as commanding a very low price and, in fact, having practically no sale at all. Lambs also are said to bring a low price. Much will depend in many localities on the prices brought by special crops, as, for instance, tobacco, which are not yet sold. Taking everything into consideration, for the State at large, the season has been far from a profitable one.

NOTES OF CORRESPONDENTS.

(Returned to us October 30.)

BERKSHIRE COUNTY.

Sheffield (Dwight Andrews). — Root crops will not be average, although they are doing well of late. Farm stock is looking well and in good condition. Fall seeding done late is looking finely. Apples have commanded average price, and we consider the crop a profitable one. Hay has been our most profitable crop and buckwheat our least profitable one. Considered as a whole, the season has not been an average one.

Becket (Wm. H. Snow). — Root crops have not proved to be average, owing to drought. Farm stock is in fair condition. Fall seeding is late. About average prices received for grafted apples; no sale for cider apples. Potatoes have been our most profitable crop and corn our least profitable one. The season will average well with past years.

Lee (A. Bradley). — Farm stock is about 95 in condition. Apples have brought about three-fourths the prices of former years; the crop is considered a profitable one. Hay has been our most profitable crop and potatoes our least profitable one. Considered as a whole, the season has hardly been a profitable one.

Stockbridge (F. A. Palmer). — All roots except flat turnips have done well. Stock looks well, having been cared for through the drought by extra feeding. Dairy products have brought good prices; horses are very low, lambs lower than usual and wool knocked out of sight. Fall seeding is in fine condition. Prices for apples are good as usual, and they are paying the farmer well. Grass and corn were our most profitable crops and tobacco our least profitable one. The season has been fairly profitable.

Hancock (C. H. Wells). — Root crops not average. Farm stock not quite in average condition, on account of short feed. Fall seeding in poor condition. Prices for apples about as last year. Potatoes have been our most profitable crop and corn our least profitable one. I think farmers in this section will have to

spray their trees before they will realize much profit from apples. The season as a whole has been fairly profitable.

Cheshire (L. J. Northup). — Root crops have been a little off from average. Farm stock looks fairly well where they have been fed extra. Fall seeding was late, but quite an acreage has been seeded and looks well. Hand-picked apples bring $1.50 per barrel; probably after deducting expenses they will not net the grower more than $1. Hay has been our most profitable crop and potatoes probably the least profitable one, at present price of 50 or 55 cents per bushel. Our farmers have just cause to say the season has not been a profitable one.

FRANKLIN COUNTY.

Rowe (J. Frank Brown). — Root crops are average. Farm stock is in from fair to good condition. Fall seeding is in good condition. Prices for apples average; I think the crop the best the farmer has. Apples have been our most profitable crop and potatoes our least profitable one. As a whole, I think the past season has been a profitable one for live, wide-awake farmers.

Buckland (J. D. Avery). — Farm stock not quite in average condition, in consequence of short feed in pastures. Fall seeding not as good as usual, but it has improved wonderfully since the late rains. Prices for apples about as in former years; the crop has been a very profitable one for farmers in this section. Corn has been our most profitable crop and potatoes our least profitable one. The season has not been up to the average in profit, owing to the fact that the severe drought made it necessary to feed dairy stock heavily from the barn during the late summer and fall, thereby greatly reducing the profits from this source; also to the fact that sheep products have been lower than for many years, — wool 13 cents per pound, and lambs a drug at 3 cents.

Conway (J. C. Newhall). — Hardly any root crops raised here. Owing to the severe drought, farm stock is not up to an average condition. Fall seeding is remarkably good for this time of year. For selected apples the price has been from $1.25 to $1.50 per barrel; I think the crop just about pays expenses. Tobacco at 15 cents per pound is our most profitable crop and potatoes our least profitable one. The season has not been a profitable one, as farm produce has been low and good help scarce and high.

Deerfield (Chas. Jones). — Root crops have been average. Fall seeding is looking extra well, and more has been done than usual. Farm stock is in good condition. Apples a good crop, with a good demand and prices fair. Hay is a short crop, the rowen crop being

very short. Onions a small crop, with prices low and sales slow. Tobacco an extra good crop, and has cured well. Tobacco has been our most profitable crop and onions our least profitable one. The season has been about a fair average.

Sunderland (J. M. J. Legate). — Root crops have not proved average crops. Farm stock is in good condition. Late seeding is looking well, but seeding in the corn fields was about a failure. The price of apples has been from $1 to $1.25 per barrel; I do not consider the crop profitable. Tobacco is not sold, but it looks as if that would be our best crop. Onions are our least profitable crop. Considered as a whole, the season has not been a profitable one.

Northfield (Chas. Pomeroy). — Root crops are not average. Farm stock is in first-rate condition. Fall seeding is in good condition. Prices for apples about average; not much money in selling first quality for $1.25 per barrel. Hay has been our most profitable crop and oats our least profitable one. Considered as a whole, the season has been about an average one for profit.

HAMPSHIRE COUNTY.

Belchertown (H. C. West). — Root crops far below average, especially those sown early. Farm stock is in fair condition, nearly if not quite up to the average. Fall seeding seldom in better condition. Prices for apples fully up to the average; decidedly they are one of the most profitable of New England crops. Corn, rye, early sown oats, barley, hay and apples were our most profitable crops and roots and potatoes our least profitable ones. The season has hardly been a favorable one, but the farmer has less to complain of than those in most vocations.

Amherst (Wm. P. Brooks). — Very few English turnips, mangolds and Swedes very poor, carrots fair to good. Farm stock is perhaps a little thinner than usual, but is otherwise in good condition. Fall seeding is generally in good condition. Prices for apples have been very good; a profitable crop when well grown and handled. Tobacco, corn, apples and potatoes are our most profitable crops and roots and rye our least profitable ones. The season is hardly average with recent years, though much depends on the turn prices for tobacco take.

North Hadley (H. C. Russell). — Root crops suffered from dry weather until late in the season, when they improved very much. Stock has done well during the past month. Fall seeding in good condition. Apples lower in price than usual, — 90 cents to $1.10 in bulk. Potatoes have done as well as any crop, and onions

have been the least profitable. Farmers complain of hard times and low prices, with crops below the average. On the whole, it is not considered a prosperous year.

Southampton (C. B. Lyman). — The fall rains have helped out the root crops and they are proving very good. Farm stock is looking fairly well. Fall seeding is looking first rate, more of it than usual. Apples were a good crop, and are mostly sold, price $1.25 per barrel, and have netted the farmers about as much money as any crop. Hay is the most profitable crop; so many crops were injured by the drought that is hard to tell which is least profitable. As a whole, the season has not been a very profitable one.

Goshen (Alvan Barrus). — Root crops very uneven; some nearly a total failure, others fairly good; average 75 per cent of a good crop. Farm stock is somewhat below the average in condition. Fall seeding in rather extra condition. Apples are uneven, but will prove profitable to those having a crop. Dairying has probably taken the lead, though pastures have been short, and a consequent decrease of milk with a greater cost for feed. Some farmers are holding one or two crops of wool, while others have sold for 12 or 15 cents, — just about half the former price. The season has most decidedly not been a profitable one.

Worthington (C. K. Brewster). — Root crops are about a fair average. Stock which is dependent on pasture feed is looking thin. Fall seeding and fall feed started remarkably after the rains, and are now fair. Apples about average in price; yield good and fairly profitable. Hay and corn have been our most profitable crops and oats our least profitable one. Considered as a whole, the season has been fairly profitable. A new creamery is being built, and will probably be in operation Jan. 1, 1895.

HAMPDEN COUNTY.

Tolland (F. T. Moore). — Root crops are about three-fourths of an average. Farm stock is not quite so good flesh as usual. Very little fall seeding is done, as it is liable to winter-kill in our loam soil. Prices for apples are low; the profit depends on the value of the land for other crops, and on how much it costs to pick and market them. Grass has been our most profitable crop and corn our least profitable one. The horn fly has been very hard on stock this season. The season has been a pretty hard one for our farmers.

Westfield (C. F. Fowler). — Root crops not up to average. Farm stock in good condition. Fall seeding is a little late, but

looking fairly well. Prices for apples compare favorably with former years; the crop is a profitable one on suitable land. Tobacco is unsold and hay always salable, so cannot tell which will be most profitable. It is hard to estimate profits before crops are sold, but on the whole I consider the season a good average one.

West Springfield (J. N. Bagg). — I think roots are average crops. Farm stock is in good condition. Fall seeding is backward. Apples here are remarkably fair; the demand for early ones was dull, and late ones are in demand for export. Probably corn has been our least profitable crop. Considered as a whole, the season has not been a profitable one.

Chicopee (R. W. Bemis). — Root crops have proved average except on very dry ground. Farm stock is in fair condition. Fall seeding is very good; not so much done as usual. Prices for apples about the same as former years; I do not think the crop profitable, as we handle it. Corn has been our most profitable crop and oats our least profitable one. The season has been as profitable as any.

Wilbraham (H. M. Bliss). — Root crops are fully average. Farm stock is in average condition. Early sown fall seeding is in good condition. Apples about the same price as last year. Grass and potatoes have been our most profitable crops and corn our least profitable one. The severe drought has been a drawback to the success of our farmers.

Monson (A. H. White). — Root crops have not proved average. Farm stock is not quite in average condition, on account of drought. Fall seeding is doing quite well now; it did not start well, on account of drought. Prices for apples are not to be complained of, and the crop is a fairly profitable one. Apples have been our most profitable crop and potatoes our least profitable one. Feed has been short, so that cows have failed to be profitable, and the prices have been low. I think the season the most discouraging for many years.

WORCESTER COUNTY.

Warren (W. E. Patrick). — Root crops have not turned out to be average. Farm stock is not in quite so good flesh as usual at this time of year. Fall seeding has improved with the recent rains, but is not quite up to the average. Prices for apples are a little better than in former years, when the crop was equally large: it is a profitable crop. Rye, corn and apples are our most profitable crops, and potatoes, oats and barley our least profitable ones. The season has been far from a profitable one.

West Brookfield (L. H. Chamberlain). — Root crops not up to the average. Farm stock in good health, but not in average flesh. What little fall seeding was done is looking rather feeble. Apples have been above the average in price; I consider them one of our most profitable crops. Corn has been our most profitable crop and potatoes our least profitable one. I think the season has hardly been a profitable one for our farmers.

Petersham (S. B. Cook). — Root crops have been average. Stock is in fairly good condition, as grass has grown luxuriantly of late. Fall seeding has started well but is late, and it is feared will winter-kill. Prices for apples a little below average; I do not think the crop profitable, in view of the expense of packing and freighting. Hay and potatoes have been our most profitable crops and corn our least profitable one. Considered as a whole, the season has been only moderately profitable.

Westminster (Joseph Hager). — Root crops are below average. Farm stock is not in very good condition, owing to dry weather. Fall seeding is in average condition. Prices for apples very poor, — hard getting $1 per barrel; no profit in apples, as a rule. Potatoes have been our most profitable crop and pears and apples our least profitable one. Considered as a whole, the season has been below average. During the fall there have been frequent light rains and unusually pleasant weather, with no killing frosts, so that everything is now looking well.

Leominster (W. B. Hosmer). — Root crops have not proved to be average. Farm stock is in very fair condition. Fall seeding is late, but is now looking well. Prices for winter apples better than usual; the crop a favorable one. Hay and fruit have been our most profitable crops and root crops our least profitable ones. I see no reason why farmers need complain of the season.

Holden (G. S. Graham). — Root crops are average. Stock is healthy, but rather thin; that turned out to pasture comes home very thin. Fall seeding is backward, there not having been enough moisture to start it early. Apples bring about $1.25 per barrel; I consider the crop profitable. Potatoes are generally our most profitable crop. Hay and pasturage suffered most from the drought, and hay is also low in price. The season has been a profitable one, as, notwithstanding one of the severest droughts for years, nearly all crops have done very well. Grapes never so sweet and good; no frost to injure them yet.

Worcester (H. R. Kinney). — Roots are hardly average, as the hot, dry weather of early fall burned them. Stock is generally in good condition, though feed has been short. Apples were a good crop, and have sold as high as usual. Apples have probably been

the best crop on many farms and hay the lightest of any. There has been much complaint about dry weather and low prices; but those farmers who have kept on the move have done as well as those in other lines of business. Too much should not be expected in the present state of the country.

Sutton (O. P. Johnson). — Roots have proved to be average crops. Farm stock is in fair condition. Fall seeding is late, but looks finely. Prices for apples good, and the crop a profitable one. Hay and apples have been our most profitable crops and potatoes our least profitable one. I should think the season had been a profitable one for our farmers.

Blackstone (L. R. Daniels). — Root crops are less than average, as the rain came too late. Farm stock is generally in good condition; new milch cows scarce and costly. Fall seeding very good; rains came at just the right time. Dealers paid $1.25 for apples delivered at the station; well-managed orchards are profitable. Early potatoes and other garden crops, hay and all fodder crops that go to produce milk have been the most profitable, and fruit crops of all kinds the least profitable. The scarcity and high cost of empty barrels have operated to reduce the profit of the apple crop. The season has been a moderately profitable one.

MIDDLESEX COUNTY.

Groton (Daniel Needham). — Root crops not up to the average. Farm stock in good condition. Fall seeding in good condition. Prices for apples much better than usual; I consider the crop very profitable. Apples and hay have been our most profitable crops and market-garden crops our least profitable ones. But for the large apple crop and the highly remunerative prices the farmers would have had less than an average season in cash value returns. As it is, the year must be regarded as very satisfactory. The demand for winter apples has been very active, and the prices until the middle of October have been advancing; since then they have fallen off a very little. Groton farmers will receive not less than $35,000 for their apples, and other towns in this vicinity will realize large sums.

Westford (Arthur Wright). — Root crops are average. Farm stock is in good condition. Not a very large amount of fall seeding has been done this fall in this vicinity. Prices for apples have been better than in former years, and the crop is a profitable one. Apples have been our most profitable crop and potatoes least profitable except on moist land. Considered as a whole, the season is above the average for profit.

Chelmsford (P. P. Perham). — Root crops a good average. The external appearance of farm stock is as good as usual. Fall seeding caught well, and looks very promising at present. Prices for fall apples have been lower than an average. Hay has been our most profitable crop and wheat our least profitable one. In spite of the low prices, apples have been a profitable crop. As a whole, the farmers in this vicinity have had a profitable season.

Wilmington (E. N. Eames). — Root crops have proved to be average. Home stock is looking well, and stock arrived home from pasture in good condition. Fall seeding has been somewhat injured by drought. As to apples, seconds are selling very well, No. 1 Baldwins sell at from $1.50 to $2 per barrel; the crop is a profitable one. Potatoes have been our most profitable crop and cabbages our least profitable one. Considered as a whole, the season has been a profitable one.

Winchester (Marshall Symmes). — Root crops are average; beets and white turnips especially good. Fall seeding is all up in good shape, and was never in better condition. Prices for apples a little lower than usual, but the crop a profitable one. The season has not been as profitable for our farmers as have some others.

Weston (H. L. Brown). — Root crops have been a good average. Farm stock always looks well in this locality; no poor stock kept. Fall seeding has a good start, and is looking well. Fall apples have been selling for low prices; winter apples on trees at about the usual price, — 50 to 75 cents per barrel. Cabbages have been our best crop and potatoes our least profitable one. Market-garden crops have brought low prices, and hardly paid the cost of raising. Considered as a whole, the season has not been a profitable one.

Framingham (H. S. Whittemore). — Root crops are more than average. Farm stock is in good condition, and looking well. Fall seeding is good, and looking finely. Prices for apples much lower than in former years; do not consider it a profitable crop at ruling prices. Corn and potatoes have been our most profitable crops and oats and onions our least profitable ones. I think this year is an average one, but not very profitable.

ESSEX COUNTY.

Haverhill (Eben Webster). — Root crops about average, except on very dry land. Farm stock in as good condition as usual. Fall seeding has come up since the rains, and is looking well now. Prices for apples the same as two years ago, and the

crop a good one. The season has been a little less profitable than usual.

Groveland (Abel Stickney). — Root crops have proved to be average. Farm stock is in very good condition. Fall seeding is not in first-class shape. Prices for apples less than average, but I think the crop is profitable. Hay has been our most profitable crop and cranberries our least profitable one. Not a particularly profitable season; farmers feel the hard times; produce is low and sales slow.

Newbury (G. W. Adams). — Root crops have proved to be average. Farm stock is in fair to good condition. Very little fall seeding has been done; condition poor to fair. Prices for apples lower than usual, as compared with size of crop; barrels high, labor scarce; not very profitable. Potatoes have been our most profitable crop, and strawberries, especially the later kinds, the least profitable. The season has been profitable so far as the production of a good crop means profit, but the crops do not sell.

North Andover (Peter Holt, Jr.). — Roots are hardly an average, the dry weather causing a small growth. Farm stock is in fairly good condition. Late sown seed looks fully as well as that sown earlier. Winter apples found a quick sale at $1 per barrel; fall apples were very cheap. Potatoes were our most profitable crop and cabbages our least profitable one. Farmers have made less money than usual.

Ipswich (O. C. Smith). — Most root crops are up to the average, except on very dry soils. Stock generally is in good condition. Fall seeding somewhat backward from drought, but generally a good catch. Prices very low for fall apples, about average for winter fruit; as profitable as any crop. Hay and fruit have been our most profitable crops, and potatoes our least profitable one. Profits will be small, and not up to the average.

Danvers (C. H. Preston). — Root crops are fair. Fall seeding is in good condition. The prices for apples are low and the profit small. Considered as a whole, the season has not been a profitable one for our farmers.

NORFOLK COUNTY.

Medway (Monroe Morse). — Farm stock is in good condition. Fall seeding is as good as usual. Apples are selling at canning factories at 75 cents per barrel; last year, $1; hand-picked for winter use, $1.25; rather low.

Millis (E. F. Richardson). — Root crops not average. Farm stock in fair condition. Fall seeding in fair condition. Apples an immense crop in this locality; prices low, but crop profitable.

Potatoes are our most profitable crop and grass our least profitable one. Considered as a whole, the season has not been a profitable one for our farmers.

Medfield (Geo. R. Chase). — Roots have proved to be average crops. Farm stock is generally in good condition, as our people generally feed well. Fall seeding below the average, except on low land. The price for winter apples is not yet fixed; fall fruit is so abundant as to render it unsalable. Cream, butter and milk have been our most profitable products. The season has been a very trying one, on account of the drought.

BRISTOL COUNTY.

Attleborough (Isaac Alger). — Root crops are hardly up to the average. Farm stock is in good condition. Fall seeding is in good condition. Apples have sold for about average prices, and the crop has been a profitable one. Considered as a whole, the season has been a fairly profitable one for our farmers.

Mansfield (Wm. C. Winter). — Root crops generally under the average. Farm stock in good condition. What little fall seeding has been done is looking well. Apples are plenty and prices about the same as for some years past, — $1.50 per barrel; I do not consider them profitable. Hay, though under average, is our most profitable crop, and corn probably our least profitable one. All early crops suffered much from drought; late rains helped out some of the late crops, and pastures are now in fair condition. I do not consider the season a profitable one.

Taunton (C. H. Wilmarth). — Root crops are average. Farm stock is in good condition. Fall seeding is below the average, on account of drought. Apples have been lower in price than in former years, but are still fairly profitable. The season has been a fairly profitable one for our farmers.

Raynham (N. W. Shaw). — Root crops have not proved average crops. Farm stock is in fair condition. Fall seeding is not in average condition. Prices for apples have been very low, but nevertheless I consider the crop a profitable one. Hay has been our most profitable crop and potatoes our least profitable one. The drought and low prices have given the farmer but little, if any, profit on his year's work.

Berkley (R. H. Babbitt). — Root crops are not up to the average. Farm stock is in good condition. Fall seeding is backward, but coming on well. Prices for apples are lower than usual, but the crop is very large; there is a great deal of work for a little money. Corn has been our most profitable crop and strawberries

our least profitable one. I think the season has not been a profitable one. The severe frosts in May, followed later in the season by protracted drought, and by a frost the 22d of August, which destroyed many of the cranberries in this part of the State, have combined to make it rather a remarkable season.

Dartmouth (L. T. Davis). — Root crops are not up to the average. Stock has been kept in good condition by feeding in the barn. Fall seeding about in fair average condition. Apples are very low in price; consequently there is not much profit connected with them. Grass has been our most profitable crop and there have been a great many which might be called least profitable. The past season as a whole has been a very hard one for the farmers of this section. Crops in most instances were very light and prices very low in our local market, owing to so many being out of employment.

PLYMOUTH COUNTY.

Hingham (Aaron Low). — Root crops have proved to be average. Farm stock is in fair condition. Fall seeding is in good condition. Prices for apples are low, quality good. Cabbages have been our most profitable crop and potatoes our least profitable one. The season has been unfavorable for most crops, and very low prices for farm products have made it a hard year for farmers.

West Bridgewater (F. E. Howard). — Root crops have not been average either in quantity or price. Farm stock is looking well at present. Drought prevented fall seeding from coming up until late, but the condition is good. Prices for apples have been lower than in former years; I do not consider the crop profitable. Hay has been our most profitable crop and apples our least profitable one. The season has not been a profitable one for our farmers.

Hanson (F. S. Thomas). — Root crops have not proved to be average. Farm stock is in good condition. Fall seeding is in good condition. The price of apples is low yet, but there has been a feeling that they would bring higher prices if kept a few weeks; so far no improvement in price, and they are beginning to rot badly. When picked they were smooth, high colored and free from worm holes, and promised to keep well. The crop is not very profitable. Summer garden stuff has been our best crop. The season has perhaps been fairly profitable, but farmers have felt the hard times.

Marshfield (J. H. Bourne). — Root crops not up to average; turnips now growing rapidly. Farm stock is in nearly average

condition. Very little fall seeding has been done, but it is doing well now. Prices for apples were very low early in the season, higher now, with improving prospects; the crop is profitable if rightly managed. Corn and hay have been our most profitable crops and potatoes our least profitable one. Notwithstanding the dry season, the yield of milk has been good, as we do not depend on our pastures, they being poor every year. Considered as a whole, the season has not been a profitable one.

Kingston (J. H. Cushman). — Root crops are about two-thirds the usual average. Stock as a whole is looking well. Apples are a drug at any price, there being no sale for them at present. Hay has been our best crop and corn our poorest. Considered as a whole, the season has not been a profitable one.

Lakeville (Elbridge Cushman). — Root crops are not average. Farm stock is in good condition. Fall seeding is in good condition. Prices for apples have been below the average, but I consider the crop a profitable one. Hay and corn have been our least profitable crops. Drought and low prices have reduced the present season rather below the average.

BARNSTABLE COUNTY.

Sandwich (J. R. Holway). — Farm stock is in good condition. Fall seeding is fair, but late. Apples have brought average prices. I do not think there has been a profitable crop raised in this locality this year; all crops are very small. Frost, insects and dry weather took about all the profit, and the farmer has to take what is left.

Barnstable (John Bursley). — Beets good; turnips a small crop. Farm stock is in fair condition. Fall seeding is very good, considering the lateness of sowing. Apples full average in price; good, late-keeping winter fruit is profitable. Cranberries are our most profitable crop and potatoes our least profitable one. Corn is husking out a very good crop, much better than the average. The season will average as profitable as the last five years.

Dennis (Joshua Crowell). — Root crops are not average. Farm stock is in fair condition. What little fall seeding was done is looking very well. Apples about an average crop; hardly a profitable one in this section. Cranberries are the leading crop, and have proved almost a failure this year, prices are high. The season has not been a profitable one for our farmers.

Brewster (J. H. Clark). — Root crops are average. Farm stock is in good condition. Fall seeding is in good condition. Prices for apples rather lower than usual; crop fairly profitable.

Cranberries are our most profitable crop and potatoes our least profitable one, on account of drought. Considered as a whole, the season has not been a profitable one.

Eastham (J. A. Clark). — Roots are not an average crop. Farm stock is in good condition. Apples are low in price; not many raised for market. Asparagus has been our most profitable crop and potatoes came the nearest to being a failure. The profit of the season will depend in a great measure on how the turnip crop proves and the prices obtained. It looked like a failure, but the late rains have worked wonders, and with mild weather it will be a good crop.

DUKES COUNTY.

West Tisbury (Geo. Hunt Luce). — Root crops have proved to be average. Farm stock is in good condition. Fall seeding is in very good condition. Apples are not a profitable crop; prices much the same as usual. Hay has been our most profitable crop and corn our least profitable one. Considered as a whole, the season has not been a profitable one.

BULLETIN OF
MASSACHUSETTS BOARD OF AGRICULTURE.

ENTOMOLOGICAL.

The Buffalo Carpet Beetle.

Anthrenus scrophulariæ L.

This insect is exceedingly destructive to all kinds of woollen materials, but not to cotton or silk. The injuries reported to have been done to silk, lace curtains, etc., must have been done by something else.

Buffalo beetles and their larvæ seem to be much more abundant in rooms on the second and third floors than in those below, and in the month of March, in rooms that have been kept warm, the beetles emerge and fly to the windows, where they may be taken and destroyed. If housekeepers would look for them frequently at the windows, from the latter part of February till the end of March, and destroy all the beetles found, they would undoubtedly have far less trouble the following summer. Many of the beetles feed and transform in wool or woollens in outhouses, barns or stables. The beetles bred in such places emerge much later in the season and gather about flowers, within which they appear to feed, perhaps on the pollen, and are often brought into the houses in large numbers in the flowers.

The larvæ are often found feeding upon the woollen lint that has accumulated in the cracks of floors, and unless these are carefully cleaned out, or covered with paper under the carpet, they may come up and eat the carpet along the line of the crack, cutting it as completely as could be done with scissors. It is desirable, therefore, before putting down a carpet in a badly infested room, to saturate the lint in the cracks with benzine and cover the floor very carefully with carpet paper, or even with newspapers, in such a way that the larvæ cannot find access to the carpet from beneath. Some housekeepers paste paper over the cracks in the floor and also around the edge, turning it up and pasting it on the baseboard, so as to cover the space between this and the floor.

The beetles usually lay their eggs and the larvæ attack the car-

pets under their exposed edges, and these parts may be protected by washing over the edges and a few inches of the under side with a solution of corrosive sublimate in alcohol in the proportion of sixty grains to one pint. The alcohol quickly evaporates, leaving the corrosive sublimate over all the fibres of the carpet where the application has been made. It must be remembered that corrosive sublimate is a rank poison and cannot be safely used where children play upon the carpet.

The larvæ of the Buffalo beetles appear to be attracted to certain colors of a carpet more than to others, especially to the animal dyes, and some people have found it very useful to spread pieces of carpeting in which red was the prevailing color on the bare floors of closets, and then take them up every day and kill the larvæ found under them.

I have tried many insecticides and many methods for the destruction of the Buffalo beetle, and find no more successful way of keeping a house free from them than by a very careful watch for the beetles on the windows in February and March, a frequent inspection of all woollen clothing not in constant use, a daily examination of pieces of red carpeting on the floors of closets which are liable to be infested, and carefully excluding the beetles from flowers brought into the house.

It is necessary for the members of the family to be able to recognize this insect in its different stages, and to aid in this matter

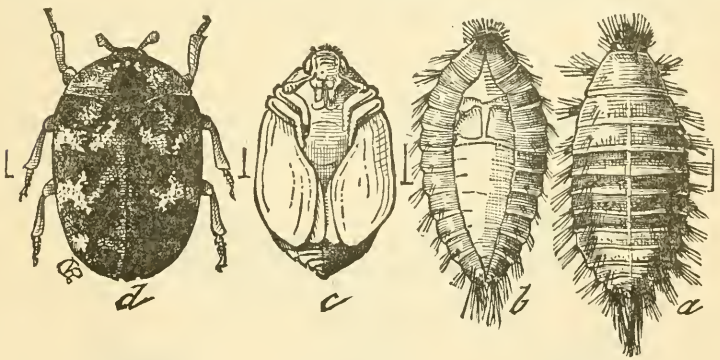

Fig. 1. — *Anthrenus scrophulariæ* L.
a, larva; *b*, skin of a larva; *c*, pupa; *d*, beetle. All much enlarged. (After Riley.)

Fig. 1 is introduced, which represents the full-grown larva at *a*, the larva skin at *b*, the pupa or quiet stage at *c*, and the perfect beetle at *d*, all greatly enlarged.

The perfect beetle is about three-sixteenths of an inch in length, black and white as marked in Fig. 1, *d*, and has a scarlet stripe along the middle of the back. The insect does no injury in this stage of its existence, but lays its eggs, and from these are hatched

the larvæ which injure the woollen fabrics. The larva, Fig. 1, *a*, when fully grown, is rather longer than the beetle, and is clothed with stiff brown hairs which are extended into a short tail-like appendage at the posterior end.

The Pitchy Carpet Beetle.

Attagenus piceus Oliv.

The larva of this beetle is often found feeding on carpets in the same manner as the Buffalo carpet beetle and sometimes associated with it. The full-grown larva is about one-third of an inch in length, of a brownish color, ringed with whitish between the segments, largest near the head and tapering towards the posterior extremity, which is provided with a long pencil of diverging hairs. The whole surface of the body is covered with short, coarse, brown hairs, which are so arranged as to give a smooth and somewhat glossy appearance to the larva, which is quite hard and wiry. It crawls quite rapidly, with a peculiar gliding movement.

The perfect beetle is from one-fifth to one-seventh of an inch in length, more elongated than the Buffalo carpet beetle, black, and clothed with minute yellowish or brownish hairs, giving the beetle a general brownish color, varying from light brown to dark, pitchy brown. There is but one generation in a year, as indicated by those which I have bred, for larvæ found in June did not transform to perfect beetles until the following May.

The remedies for this pest are the same as for the Buffalo beetle.

Clothes Moths.

Two species of clothes moths are common in this country, brought over from Europe many years ago. The first of these was named

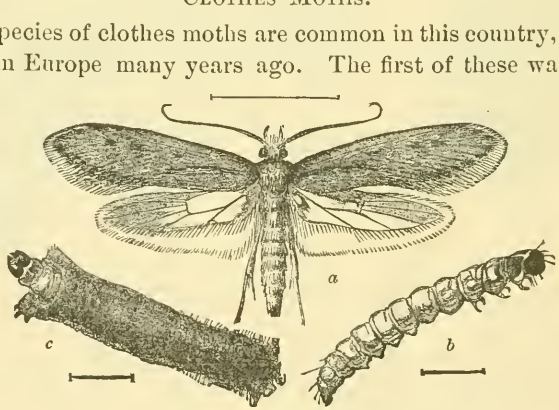

Fig. 2.—*Tinea pellionella* L.
a, adult; *b*, larva; *c*, larva in case. All much enlarged.
(After Riley.)

Tinea pellionella by Linneus. It is a grayish-colored moth, with two or three darker obscure spots on the fore wings and lighter-

colored, silky hind wings. The head is covered with dull yellowish, erect hairs. The fore wings expand about half an inch. Fig. 2, *a* represents this moth, greatly enlarged. These insects are frequently seen in our houses, during the summer months, at rest on the walls or ceiling in the daytime, and flying about at night in the darker parts of the room, seldom going near a light. After the sexes pair, the female deposits about sixty eggs, which hatch in from six to eight days, when the young caterpillars begin to feed and at once construct portable cases of the materials on which they feed. These cases are of a cylindrical form, open at each end and lined with delicate silk. When the caterpillars have grown too large for their cases they split them down at one end and gore in a piece with new material, and then enlarge the opposite end in the same manner. They never leave their cases, but, in feeding, put out their heads and forward part of their bodies, and as they move about drag the cases along with them (Fig. 2, *c*). This insect, which has a world-wide distribution, feeds on woollen goods of all kinds, fur, hair, feathers, etc., and is a notorious pest.

The other clothes moth, known by the name of *Tineola biselliella* (Fig. 3, *a*), is rather smaller than the one described above, of a pale yellow-ochre color, without spots or marks, and has the head covered with short, erect hairs of a reddish yellow-ochre color. The hind wings are silky and much paler than the fore wings. The caterpillar (Fig. 3, *b*) is of a whitish color, with a yellow head, and constructs no case whatever, but draws together, very loosely, a mass of the materials on which it feeds, for a cocoon within which to transform (Fig. 3, *c*). This species, which is distributed very widely over the world, is particularly destructive to woollen fabrics, fur, hair, feathers, dried insects, and is also said to attack dried plants.

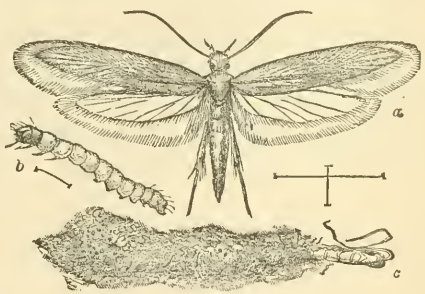

Fig. 3. — *Tineola biselliella* Hum.
a, adult; *b*, larva; *c*, cocoon and empty pupa skin. All much enlarged. (After Riley.)

A third species, from Europe, *Tinea tapetzella*, is said to occur in this country, but this needs verification, as all the specimens seen by me may have come from Europe as pinned insects.

Remedies and Preventives.

It is very desirable, in houses where rugs are used instead of carpets, to take them up and shake them out of doors frequently

during the spring and summer. If carpets are used and they become infested, it is well to lay wet cloths along the edges and use a hot flatiron on them. If this is properly done it will force the steam down through the carpet, killing not only the moths but also any carpet beetles that may be feeding beneath.

All garments liable to be attacked by carpet beetles or clothes moths, if not to be used during the summer, should be thoroughly shaken and then packed away in tight paper bags, or in pasteboard boxes with a strip of paper pasted around the edge of the cover so as to leave no crack.

Ants.

Small red ants often infest dwelling houses and become an intolerable nuisance, not because of the amount they eat, but because of their habit of getting into sugar and other sweets.

The important thing is to find their nests, for it is then a comparatively easy matter to destroy the entire colony. It may be that the removal of a board where they come into a room will expose their headquarters, when a little kerosene poured over it will destroy all the inmates and put an end to the nuisance.

If they come from some ant-hill outside of the house, they can be destroyed by making holes about a foot apart in the hill and pouring a teaspoonful of bisulphide of carbon into each and stamping the ground down. The bisulphide of carbon quickly evaporates, and permeating the ground, destroys all in the colony.

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